MOTOROLA

TETRA Mobile Terminal

MTM800
380-430 MHz (MT912M)
450-470 MHz (MT512M)

MTM700
380-430 MHz (MT912)
806-870 MHz (MT712)

Installation Manual

art Number: 6866534D67_H

KT-EMEA / European Publications Department Berlin, Issued: 01.2006

COPYRIGHT

Copyrights

© 2001 - 2006 Motorola Inc. All rights reserved.

No part of this manual may be reproduced, transmitted, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, without the prior written permission of Motorola Inc.

Computer Software Copyrights

The Motorola products described in this manual may include copyrighted Motorola computer programs stored in semiconductor memories or other media. Laws in the United States and other countries preserve for Motorola certain exclusive rights for copyrighted computer programs, including the exclusive right to copy or reproduce in any form, the copyrighted computer program. Accordingly, any copyrighted Motorola computer programs contained in the Motorola products described in this manual may not be copied or reproduced in any manner without the express written permission of Motorola. Furthermore, the purchase of Motorola products shall not be deemed to grant, either directly or by implication, estoppel or otherwise, any license under the copyrights, patents or patent applications of Motorola, except for the normal non-exclusive royalty-free license to use that arises by operation of law in the sale of a product.

Trademarks

Motorola, the Motorola Logo and all other trademarks identified as such herein are trademarks of Motorola Inc. All other product or service names are the property of their respective owners.

Product Safety and RF Energy Exposure for TETRA Mobile Terminals installed in Vehicles or as Fixed Site Control Stations

Caution

THIS CHAPTER IS AN EXTRACT OF THE MULTI LINGUAL MOBILE SAFETY BOOKLET PUBLICATION No. 6866537D37_.

FOR THE LATEST SAFETY INFORMATION REFER TO THE SEPARATE SAFETY BOOKLET DELIVERED WITH YOUR TERMINAL.

BEFORE USING THIS TERMINAL READ THIS INFORMATION WHICH CONTAINS IMPORTANT OPERATING INSTRUCTIONS FOR SAFE USAGE AND RF ENERGY AWARENESS AND CONTROL INFORMATION FOR COMPLIANCE WITH RF ENERGY EXPOSURE LIMITS IN APPLICABLE NATIONAL AND INTERNATIONAL STANDARDS.

The information provided in this document supersedes information contained in user guides, manuals and other documentation published prior to **February 2002.**

RF Energy Exposure Awareness and Control Information, and Operational Instructions for FCC Occupational Use Requirements.

Note: This terminal is intended for use in occupational / controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC/ICNIRP limits. This terminal device is NOT authorized for general population, consumer or any other use.

This 2-way terminal uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly, can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health and industry work with organisations to develop standards for safe exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection.

All Motorola 2-way terminals are designed, manufactured and tested to ensure they meet government-established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of 2-way terminals. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it.

Please refer to the following Web sites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.

http://www.fcc.gov/oet/rfsafety/rf-faqs.html

http://www.osha.gov/SLTC/radiofrequencyradiation/index.html

Federal Communications Commission Regulations (US markets only)

The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for mobile 2-way terminals before they can be marketed in the U.S. When 2-way terminals are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. Exposure awareness can be facilitated by the use of a label directing users to specific user awareness information. Your Motorola 2-way terminal has an RF exposure product label. Do not remove this RF exposure label from the device. Also, your Motorola user manual, or separate safety booklet, includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

Compliance with RF Exposure Standard

Your Motorola terminal is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. **This terminal complies with IEEE and ICNIRP exposure limits for occupational/controlled RF** exposure environments at duty factors of up to 50% talk–50% listen and is authorised by the IEEE/ICNIRP for occupational use. In terms of measuring RF energy for compliance with these exposure guidelines, your terminal antenna radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

Your Motorola two-way terminal complies with the following RF energy exposure standards and guidelines:

- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR part 2 sub-part J
- American National Standards Institute (ANSI) / Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992
- Institute of Electrical and Electronic Engineers (IEEE) C95.1-1999 Edition
- International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998
- Ministry of Health (Canada) Safety Code 6. Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz, 1999
- Australian Communications Authority Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2003
- ANATEL, Brasil Regulatory Authority, Resolution 256 (April 11, 2001) “additional requirements for SMR, cellular and PCS product certification.”

RF Exposure Compliance and Control Guidelines and Operating Instructions

To control exposure to yourself and others and to ensure compliance with the RF exposure limits, always adhere to the following procedures.

Guidelines:

- User awareness instructions should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

Instructions:

- **Transmit no more that the rated duty factor of 50% of the time**. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time, or less, is important because this terminal generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).
- **Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away, as shown in Table 1, from the body of a vehicle with a properly installed antenna.** This separation distance will ensure that there is sufficient distance from a properly installed (according to installation instructions) externally-mounted antenna to satisfy the RF exposure requirements in the standards listed above.

  Note: Table 1 lists the recommended lateral distance for bystanders in an uncontrolled environment from the body of a vehicle with an approved, properly installed transmitting antenna (i.e. monopoles over a ground plane, or dipoles) at several different ranges of rated radio power for mobile terminals installed in a vehicle.

Table 1

Mobile terminal Rated Power (see Note below)	Minimum Lateral Distance From Vehicle Body
Less than 7 Watts	20 cm (8 Inches)
7 to 15 Watts	30 cm (1 Ft)
16 to 39 Watts	60 cm (2 Ft)
40 to 110 Watts	90 cm (3 Ft)

Note: If you are not sure of the rated power of your terminal, contact your Motorola representative or dealer and supply the terminal model number found on the terminal model label. If you cannot determine the rated power out, then assure 90cms (3 feet) separation from the body of the vehicle.

Mobile Antenna Installation Guidelines

- These mobile antenna installation guidelines are limited to metal body motor vehicles or vehicles with appropriate ground planes.
- Antennas should be installed in the centre area of the roof or the trunk lid taking into account the bystander exposure conditions of backseat passengers and according to the specific instructions and restrictions in the Radio (Terminal) Installation Manual along with the requirements of the antenna supplier.
- Trunk lid installations are limited to vehicles with clearly defined flat trunk lids, and in some cases, to specific terminal models and antennas. See the Radio (Terminal) Installation Manual for specific information on how and where to install specific types of approved antennas to facilitate recommended operating distances to all potentially exposed persons.

- **Use only Motorola-approved supplied antenna or a Motorola approved replacement antenna**. Unauthorised antennas, modifications, or attachments could damage the terminal and may result in non-compliance with RF Safety Standards.

Approved Accessories

- This terminal has been tested and meets the RF Safety Standards when used with the Motorola accessories supplied or designated for this product. Use of other accessories may result in non-compliance with RF Safety Standards.
- For a list of Motorola approved antennas, please see your dealer or local Motorola contact. Your nearest dealer can be found at the following web site:

http://www.motorola.com/businessandgovernment/wemea/en-gb/public/functions/dealerlocator/dealerlocator.aspx

Additional Information

- For additional information on exposure requirements or other training information, visit

http://www.motorola.com/rfhealth

Compliance and Control Guidelines and Operating Instructions for Mobile Two-Way Terminals Installed as Fixed Site Control Stations

If mobile terminal equipment is installed at a fixed location and operated as a control station or as a fixed unit, the antenna installation must comply with the following requirements in order to ensure optimal performance and compliance with the RF energy exposure limits in the standards and guidelines listed on previous page:

- The antenna should be mounted outside the building on the roof or a tower if at all possible.
- As with all fixed site antenna installations, it is the responsibility of the licensee to manage the site in accordance with applicable regulatory requirements and may require additional compliance actions such as site survey measurements, signage, and site access restrictions in order to insure that exposure limits are not exceeded.

Electromagnetic Interference/Compatibility

Note: Nearly every electronic device is susceptible to electromagnetic interference (EMI) if inadequately shielded, designed or otherwise configured for electromagnetic compatibility. It may be necessary to conduct compatibility testing to determine if any electronic equipment used in or around vehicles or near fixed site antenna is sensitive to external RF energy or if any procedures need to be followed to eliminate or mitigate the potential for interaction between the terminal transmitter and the equipment or device.

Facilities

To avoid electromagnetic interference and/or compatibility conflicts, turn off your terminal in any facility where posted notices instruct you to do so. Hospitals or health care facilities may be using equipment that is sensitive to external RF energy.

Vehicles

To avoid possible interaction between the terminal transmitter and any vehicle electronic control modules, such as, ABS, engine, or transmission controls, the terminal should be installed only by an experienced installer and that the following precautions be used when installing the terminal:

1. Refer to the manufacturer's instructions or other technical bulletins for recommendations on terminal installation.

2. Before installing the terminal, determine the location of the electronic control modules and their harnesses in the vehicle.

3. Route all terminal wiring, including the antenna transmission line, as far away as possible from the electronic control units and associated wiring.

Driver Safety

Check the laws and regulations on the use of terminals in the area where you drive. Always obey them. **When using your terminal while driving, please:**

- Give full attention to driving and to the road.
- Pull off the road and park before making or answering a call if driving conditions so require.

WARNING

OPERATIONAL WARNINGS

For Vehicles With Air Bags

Do not mount or place a mobile terminal in the area over an air bag or in the air bag deployment area. Air bags inflate with great force. If a terminal is placed in the air bag deployment area and the air bag inflates, the terminal may be propelled with great force and cause serious injury to occupants of the vehicle.

Potentially Explosive Atmospheres

Turn off your terminal prior to entering any area with a potentially explosive atmosphere. Sparks in a potentially explosive atmosphere can cause an explosion or fire resulting in bodily injury or even death.

The areas with potentially explosive atmospheres referred to above include fuelling areas such as below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles, such as grain, dust or metal powders. Areas with potentially explosive atmospheres are often but not always posted.

Blasting Caps And Blasting Areas

To avoid possible interference with blasting operations, turn off your terminal when you are near electrical blasting caps, in a blasting area, or in areas posted:
"Turn off two-way radio (terminal)". Obey all signs and instructions.

For terminals installed in vehicles fueled by liquefied petroleum gas, refer to the (U.S.) National Fire Protection Association standard, NFPA 58, for storage, handling, and/or container information. For a copy of the LP-gas standard, NFPA 58, contact the National Fire Protection Association, One Battery Park, Quincy, MA.

Caution

ADDITIONAL IMPORTANT INFORMATION FOR SERVICING AND INSTALLING THE TERMINAL

Only specialized workshops should be contacted for installation, maintenance and repair work.

This unit is equipped with protection fuses in the Power and Ignition Sense Cable.
Replace these fuses only with the original ratings!

Caution: Failure to use correct manufactures approved parts may result in physical damage to this unit.

Fuse for Power Cable GKN6270/GKN6274: 10A (Motorola Part Number: 65C80283E05)
Fuse for Ignition Sense Cable HKN9327: 4A (Motorola Part Number: 65C80283E02)

Achtung

ZUSÄTZLICHE SICHERHEITSINFORMATIONEN FÜR SERVICE UND INSTALLATION DES FUNKGERÄTES

Installations, Wartungs- und Reparaturarbeiten dürfen ausschließlich von autorisiertem und geschultem Personal ausgeführt werden.

Dieses Gerät ist mit einer Schutzsicherung im Stromversorgungskabel ausgestattet.
Bei Austausch ausschließlich den Originalwert verwenden

WARNUNG: Bei Einsetzen von nicht vom Hersteller freigegebenen Ersatzteilen kann das Gerät zerstört werden.

Sicherung für Stromversorgungskabel GKN6270/GKN6274: 10A (Motorola Best.-Nr.:65C80283E05)
Sicherung für Zündungserkennungskabel HKN9327: 4A (Motorola Best.-Nr.:65C80283E02)

THIS PAGE INTENTIONALLY LEFT BLANK

DOCUMENT HISTORY

The following major changes have been implemented in this manual since the previous edition:

Edition	Description	Date
6866534D67	Initial edition	October 2001
6866534D67-A	Technical Support addresses for the APAC region added.	September 2002
6866534D67-B	Active Data Cable GMKN1022 for Packet Data Transmission added to chapter “Installation”.	December 2002
	Accessories -to- Model Chart updated.	
	Safety Information updated to meet TETRA Mobile requirements.	
6866534D67-C	Junction box added, Phone numbers, Part numbers and Pin Assignment updated.	January 2004
	Page xviii, Support Centers: ERSC phone call numbers updated.	
	Page 27 - 28: Accessories-to-Model-Chart updated.	
	Chapter Installation, Page 1-17 to 20: Implementation of the new junction box. Page 1-24: Connecting cables for Motor-cycle configuration updated and additional note for the use of the fist microphone GMMN4063_ added. Page 1-30: Pin Assignment of the Accessory Connector corrected. Page 1-38: New Radio-to-Junction Box Cable implemented. Page 1-39: Additional note for IP54 specified RS232 date cable inserted.	
6866534D67-D	Chapter Installation, Pages 46, Connection Plan for Alarm Relay corrected.	March 2004
6866534D67-E	Chapter Model Information, page 23 and 25 updated with Chinese Part Numbers.	May 2004
	Chapter Installation, page 51 to 65: Note added for different keypad labeling and new cabling for Motorcycle CHD to Expansion Head via Y-Adapter (Chinese Version) implemented.	
6866534D67-F	Safety Information updated. MTM800 (UHF) added.	February 2005

Edition	Description	Date
6866534D67-G	Pin assingment of GMKN4072 updated (Chapter Installation, page 72). Page 27 - 29: Accessories-to-Model-Chart updated.	Aug. 2005
6866534D67-H	45oMHz frequency range added. Visor Mic P/N changed (page 27). 10A Fuse P/N changed (page 28 and 32). Dashboard Installation, Figure 10 and Table 4 updated (page 42 and 43). Table 8 updated (page 57). Term „radio“ replaced by „terminal.	Jan. 2006

CONTENTS

COPYRIGHT

Copyrights 2
Computer Software Copyrights 2
Trademarks 2

PRODUCT SAFETY AND RF ENERGY EXPOSURE

RF Energy Exposure Awareness and Control Information 3
Federal Communications Commission Regulations (US markets only) 4
Compliance with RF Exposure Standard 4
Your Motorola two-way terminal complies with 4
RF Exposure Compliance and Control Guidelines and Operating Instructions 4
Mobile Antenna Installation Guidelines 5
Approved Accessories 6
Additional Information 6
Compliance and Control Guidelines and Operating Instructions 6
Electromagnetic Interference/Compatibility 6
Facilities 7
Vehicles 7
Driver Safety 7
OERATIONAL WARNINGS 8
For Vehicles With Air Bags 8
Potentially Explosive Atmospheres 8
Blasting Caps And Blasting Areas 8
ADDITIONAL IMPORTANT INFORMATION 9
ZUSÄTZLICHE SICHERHEITSINFORMATIONEN 9

DOCUMENT HISTORY 11

TABLE OF CONTENTS 13

SCOPE

SCOPE OF THIS MANUAL 17
Manuals & User Guides MTM700 EMEA 18
Manuals & User Guides MTM800 EMEA 18
Manuals & User Guides MTM700 Asia 19
Warranty and Service Support 20
SUPPORT CENTERS 21
Europe, Middle East and Africa Region 21
Piece Parts 21
Parts identification and ordering 21
EMEA Test Equipment Support 21
Asia, Pacific Region 22
Piece Parts 22
Technical Support 22
Further Assistance From Motorola 22

Parts identification and ordering 22
Latin America Region 23
Warranty and Repairs 23
Piece Parts 23
Technical Support 24

MODEL INFORMATION & ACCESSORIES

MTM700/MTM800 Mobile Terminal Model Information 25
Sales Model Nomenclature 25
Model Specifications 26
Model Descriptions 26
Accessories-To-Model Chart 27
Compatibility of Active Data Cable GMKN1022 30

INSTALLATION

Introduction 31
General Information 31
DC Power Cable Installation 32
Installation Planning 32
Installation Procedure 33
Ignition Sense Cable Installation 35
Terminal Installation 36
Standard Control Head Installation 36
Trunnion Installation 37
Installation Planning 37
Installation Procedure 38
Desktop Installation 40
Planning 40
Installation 40
Dashboard Installation 42
Installing the Terminal in an Automotive Dashboard 42
Mounting the Terminal in the Frame 43
Remote Mount Installation 44
Assembling the Back Housing for Remote Mount to the Standard Control Head 45
Assembling the Remote Front Housing to Transceiver Box 46
Installing the Remote Standard Control Head 46
Remote Mount Installation 47
General 47
Installation 47
Service 47
Connections 48
Connection Plan for Junction Box Accessory Terminal 49
Connection Plan for Accessory Connector Kit (GMBN1021) 51
Expansion Head Radio Installation 52
General 52
Expansion Head Radio with Motorcycle Control Head 52
Planning 52
Configuration with SB 9600 Interface 54
Configuration with Y-Adapter (Chinese version) 55
Motorcycle Control Head 56
Motorcycle Control Head Installation 56
Mechanical Parts 57
Installation of Connecting Cable (3066516B01) 57
Expansion Head Radio with Standard Control Head & Data Terminal 58

Expansion Head Radio with Control Terminal & Data Terminal 59
Connectors & Pin Assignment of the Terminal 60
Transceiver Rear Side - Pin Function 60
Accessory Connection Plan 62
Connectors & Pin Assignment of Expansion Head and Remote Mount Head 63
10-Pin TELCO Connector 63
25-Pin subD Connector 65
9-Pin subD Connector 66
Connector & Pin Assignment of the Standard Control Head 67
Connecting Cables 68
Motorcycle Control Head-to-Expansion Head (SB 9600 Interface) 68
Motorcycle Control Head-to-Expansion Head via Y-Adapter (Chinese version) 69
Terminal -to- Junction Box 70
Expansion Head Radio-to-Data Device 71
Expansion Head Radio-to-Fist Microphone (GMMN4063) 71
Expansion Head Radio-to-Adapter for Helmet, External PTT, etc. 72
Terminal-to-Data Device: RS232 Cable (MTM700 only) 74
Terminal-to-Data Device: Active Data Cable 75
Interface Cable SB9600-to-RS232 76
Cable Connectivity 76
Vehicle Antenna Installation 77
Mobile Terminal Operation and EME Exposure 77
Selecting an Antenna Site 77
Antenna Installation Procedure 78
Completing the Installation 78
External Speaker Installation 79

APPENDIX
Product Specific Information

Equipment Electrical Ratings 81
Normal Load Conditions 81
Fuse Identification 81

Spezielle Produktinformationen

Nennwerte für das Funkgerät 82
Betriebsbedingungen 82
Sicherungen 82

THIS PAGE INTENTIONALLY LEFT BLANK

SCOPE

SCOPE OF THIS MANUAL

This manual is intended for use by service technicians familiar with similar types of equipment. It contains informations required for the installation of the equipment described and is current as of the printing date. Changes which occur after printing date may be incorporated by a complete Manual revision or alternatively as additions.

NOTE

The mobile terminal has to be installed by trained service personnel only.

All installations should take place in accordance with the requirements of the vehicle and antenna manufacturer/supplier.

This manual is divided into the following sections:

- Safety and General Information
- Document History
- Contents
- Scope of this manual
- Model Information
- Installation
- APPENDIX Product Specific Information

MTM700 Manuals & User Guides EMEA

Installation Instructions

6866534D67 MTM700 Installation Instructions (English)

Service Manuals

6866534D19 MTM700 Detailed Service Manual (English)
6866534D20 MTM700 Basic Service Manual (English)

User Guides (Standard Control Head)

6866537D44 MTM700 Basic User Guide (English/German/French/Dutch/Spanish)
6866537D07 MTM700 Feature User Guide (English) only on MOL: (https://emeaonline.motorola.com)

User Guides (Motorcycle Control Head)

6866537D45 MTM700 Basic User Guide (English/German/French/Dutch/Spanish)
6866537D73 MTM700 Feature User Guide (English) only on MOL: (https://emeaonline.motorola.com)

Configuration Manual (Expansion Head Radio)

6866534D91 MTM700 Configuration Manual (English)

Safety Leaflets

6864117B25 Portable Safety Booklet
6866537D37 Mobile Safety Booklet

MTM700 Manuals & User Guides APAC

Installation Instructions

6866534D67 MTM700 Installation Instructions (English)

Service Manuals

6804114J10 MTM700 Detailed Service Manual (English)
6804114J12 MTM700 Basic Service Manual English)

User Guides (Standard / Motorcycle Version)

6866537D76 MTM700 Basic User Guide (English)
6815288H01 MTM700 Basic User Guide (English, Trad. Chinese)
6815287H01 MTM700 Basic User Guide (English, Simpl. Chinese)

6804112J84 MTM700 Feature User Guide (English)
6804112J82 MTM700 Feature User Guide (Trad. Chinese)
6815294H01 MTM700 Feature User Guide (Simpl. Chinese)

Configuration Manual (Expansion Head Radio)

6866534D91 MTM700 Configuration Manual (English)
6804114J03 MTM700 Configuration Manual (Trad. Chinese)
6804112J81 MTM700 Configuration Manual (Simpl. Chinese)

Safety Leaflets

6804112J96 Mobile Safety Leaflet (APAC & LACR)
6804113J25 Portable Safety Leaflet (APAC & LACR)

MTM800 Manuals & User Guides EMEA

Installation Instructions

6866534D67 MTM700/MTM800 Installation Manual (English)

Service Manual

6866537D20 MTM800 Basic Service Manual (English)
6866537D72 MTM800 380-430MHz Detailed Service Manual (English)
6866537D98 MTM800 450-470MHz Detailed Service Manual (English)

User Guides (Standard Control Head)

6866537D67 MTM800 Basic User Guide (EN / DE / FR / NL / ES)
6866537D95 MTM800 Basic User Guide (EN / IT / RU / SV)
6866537D69 MTM800 Feature User Guide (English) only on MOL: (https://emeaonline.motorola.com)

User Guides (Motorcycle Control Head)

6866537D68 MTM800 Basic User Guide (EN / DE / FR / NL / ES)
6866537D96 MTM800 Basic User Guide (EN / SV / IT)
6866537D70 MTM800 Feature User Guide (English) only on MOL: (https://emeaonline.motorola.com)

Configuration Manual (Expansion Head Radio)

6866537D82 MTM800 Configuration Manual (English)

Safety Leaflets

6864117B25 Portable Safety Booklet
6866537D37 Mobile Safety Booklet

MTM800 Manuals & User Guides APAC

Installation Instructions

6866534D67 MTM700 Installation Instructions (English)

Service Manual

6815900H01 MTM800 Basic Service Manual (English)
6866537D72 MTM800 380-430MHz Detailed Service Manual (English)
6866537D98 MTM800 450-470MHz Detailed Service Manual (English)

User Guides (Standard Control Head)

6815291H01 MTM800 Basic User Guide (English, Trad. Chinese)
6815289H01 MTM800 Basic User Guide (English, Simpl. Chinese)
6815304H01 MTM800 Basic User Guide (English, Korean)

6866537D69 MTM800 Feature User Guide (English)
6815319H01 MTM800 Feature User Guide (Trad. Chinese)
6815318H01 MTM800 Feature User Guide (Simpl. Chinese)
6815321H01 MTM800 Feature User Guide (Korean)
PMLN4669A MTM800 Combined Feature User Guide

6866537D70 MTM800 Feature User Guide (English)
6815603H01 MTM800 Feature User Guide (Trad. Chinese)
6815602H01 MTM800 Feature User Guide (Simpl. Chinese)
6815601H01 MTM800 Feature User Guide (Korean)

Data Terminal User Guides

6815292H01 MTM800 Data Terminal User Guide (English, Trad. Chinese)
6815290H01 MTM800 Data Terminal User Guide (English, Simpl. Chinese)
6815305H01 MTM800 Data Terminal User Guide (English, Korean)

CPS Start Up Manuals

6815621H01 MTM800 CPS Start Up Manual (Trad. Chinese)
6815625H01 MTM800 CPS Start Up Manual (Simpl. Chinese)
6815626H01 MTM800 CPS Start Up Manual (Korean)

Safety Leaflets

6804112J96 Mobile Safety Leaflet (APAC & LACR)
6804113J25 Portable Safety Leaflet (APAC & LACR)

MTM800 Manuals & User Guides LACR

Installation Instructions

6866534D67 MTM700 Installation Instructions (English)

Service Manual

6866537D20 MTM800 Basic Service Manual (English)
6866537D72 MTM800 380-430MHz Detailed Service Manual (English)
6866537D98 MTM800 450-470MHz Detailed Service Manual (English)

User Guides

6881097C65 MTM800 STD Basic User Guide (English, Spanish, Portuguese)
6881097C66 MTM800 M/C Basic User Guide (English, Spanish, Portuguese)
6881097C67 MTM800 Data Terminal User Guide (English, Spanish, Portuguese)

CPS Start Up Manual

6881097C68 MTM800 CPS Start Up Manual (English, Spanish, Portuguese)

CD ROM

9964416H09 MTM800 Documentation CD
(includes 6881097C65, 6881097C66, 6881097C67 and 6881097C68)

Safety Leaflets

6804112J96 Mobile Safety Leaflet (APAC & LACR)
6804113J25 Portable Safety Leaflet (APAC & LACR)

Warranty and Service Support

Motorola offers long term support for its products. This support includes full exchange and/or repair of the product during the warranty period, and service/ repair or spare parts support out of warranty. Prior to shipping any terminal back to the appropriate Motorola warranty depot, please contact Customer Resources or your Motorola dealer, distributor or reseller.
All returns must be accompanied by a Warranty Claim Form, available from your Customer Service representative or Motorola Online Extranet (MOL) or your Motorola dealer, distributor or reseller.

Warranty Period and Return Instructions

The terms and conditions of warranty are defined fully in the Motorola Customer, Dealer or Distributor or Reseller contract. These conditions may change from time to time and the following notes are for guidance purposes only.

In instances where the product is covered under a "return for replacement" or "return for repair" warranty, a check of the product should be performed prior to shipping the unit back to Motorola. This is to ensure that the product has been correctly programmed or has not been subjected to damage outside the terms of the warranty.

Prior to shipping any terminal back to the appropriate Motorola warranty depot, please contact Customer Resources (Please refer to following pages). All returns must be accompanied by a Warranty Claim Form, available from your Customer Services representative. Products should be shipped back in the original packaging, or correctly packaged to ensure no damage occurs in transit.

After Warranty Period

After the Warranty period, Motorola continues to support its products in two ways.

- Motorola's Regional Radio Support Centers offer a repair service to both end users and dealers at competitive prices.
- AAD supplies individual parts and modules that can be purchased by dealers who are technically capable of performing fault analysis and repair.

SERVICE INFORMATION

Europe, Middle East and Africa Region

European Radio Support Centre (ERSC)

Motorola European Radio Support Centre is available at:

Motorola European Radio Support Centre ERSC
Tel.: +49 (0)30 6686 1555
Fax: +49 (0)30 6686 1579
Am Borsigturm 130
13507 Berlin
Germany

EMEA Systems Support Centre (ESSC)

The Systems Support Centre is available at:

Telephone:	+44 (0) 1256 484448
E-mail:	ESSC@motorola.com

Piece Parts

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola part number is assigned to the part, it is available from Motorola Radio Aftermarket and Accessory Division (AAD). If no part number is assigned, the part is not normally available from Motorola. If a parts list is not included, this generally means that no user-serviceable parts are available for that kit or assembly.

Note on this digital Tetra Terminal: **The CPS has no capability to tune the terminal. Tuning the terminal can only be performed at the factory or at the appropriate Motorola Repair Centre. Components replacement can affect the terminal tuning and must only be performed by the appropriate Motorola Repair Centre.**

Parts identification and ordering

Request for help in identification of non-referenced spare parts should be directed to the Customer Care Organization of Motorola's local area representation. Orders for replacement parts, kits and assemblies should be placed directly on Motorola's local distribution organization or via the Extranet site Motorola Online at: https://emeaonline.motorola.com.

EMEA Test Equipment Support

Information related to support and service of Motorola Test Equipment is available by calling the Motorola Test Equipment Service in Germany at +49 (0) 6128 702179, Telefax +49 (0) 6128 951046, through the Customer Care Organization of Motorola's local area representation, or via the Internet at: http://www.gd-decisionsystems.com/cte/.

Asia, Pacific Region

Piece Parts

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola part number is assigned to the part, it is available from Motorola Radio Aftermarket and Accessory Division (AAD). If no part number is assigned, the part is not normally available from Motorola. If a parts list is not included, this generally means that no user-serviceable parts are available for that kit or assembly.

Note on this digital TETRA Terminal: **The CPS has no capability to tune the terminal. Tuning the terminal can only be performed at the factory or at the appropriate Motorola Repair Center. Component replacement can affect the terminal tuning and must only be performed by the appropriate Motorola Repair Center.**

All orders for parts/information should include the complete Motorola identification number. All part orders should be directed to your local AAD office. Please refer to your latest price pages.

Technical Support

Technical support is available to assist the dealer/distributor in resolving any malfunction which may be encountered. Initial contact should be by telephone wherever possible.
When contacting Motorola Technical Support, be prepared to provide the product model number and the unit's serial number.

Further Assistance From Motorola

You can also contact the Customer Help Desk through the following web address:
http://www.motorola.com/governmentandenterprise/contactus.

Parts identification and ordering

Request for help in identification of non-referenced spare parts should be directed to the Customer Care Organization of Motorola's local area representation. Orders for replacement parts, kits and assemblies should be placed directly on Motorola's local distribution organization or via Motorola Online (Extranet).

Latin America Region

Latin America Radio Support Centres
The Customer Support is available through the following service centres:

Warranty and Repairs: MOTOROLA DE COLOMBIA SERVICE CENTRE

Carrera 7 No. 71-52
Torre B piso 13
Oficina 1301
Bogota- Colombia
(571) 376-6990

MOTOROLA DE MEXICO SERVICE CENTRE
Bosques de Alisos #125
Col. Bosques de las Lomas
CP 05120 Mexico DF
5252576700

Piece Parts:

To order parts in Latin America and the Caribbean contact your local Motorola CGISS representative.

MOTOROLA, INC.
Latin American Countries Region
789 International Parkway
Sunrise, FL 33325
USA 954-723-8959

MOTOROLA DE ARGENTINA
Ave. del Libertador 1855
B1638BGE, Vicente Lopez
Buenos Aires, Argentina
5411-4317-5300

MOTOROLA DE LOS ANDES C.A.
Ave. Francisco de Miranda
Centro Lido, Torre A
Piso 15, El Rosal
Caracas, 1060 Venezuela
58212-901-4600

MOTOROLA DO BRASIL LTDA.
Rua Paes Leme, 524, 13 Andar
05424-010 São Paulo, Brasil
5511-3030-5000

MOTOROLA CHILE
Ave. Nueva Tajamar 481
Edif. World Trade Center
Of. 1702, Torre Norte
Las Condes
Santiago, Chile
562-338-9000

MOTOROLA DE COLOMBIA, LTDA.
Carrera 7 #71-52
Torre A, Oficina 1301
Bogotá, Colombia
571-376-6990

MOTOROLA DE COSTA RICA
Oficentro Plaza Mayor
Piso 3, Rohrmoser
San José, Costa Rica
506-296-5385

MOTOROLA DEL ECUADOR
Nuñez de Balboa #OE1-245
y Pedro Alfaro, Villa Flora
Quito, Ecuador
593-2264-1627

MOTOROLA DE MEXICO, S.A.
Calle Bosques de Alisos #125
Col. Bosques de Las Lomas
05120 México D.F.
México
52-555-257-6700

MOTOROLA DEL PERU, S.A.
Ave. República de Panama 3535
Piso 11, San Isidro
Lima 27, Peru
511-211-0700

Technical Support:

https://businessonline.motorola.com, go to **Contact Us** to request technical support

Some replacement parts, spare parts, and/or product information can be ordered directly. If a complete Motorola part number is assigned to the part, it is available from Motorola. If no part number is assigned, the part is not normally available from Motorola. If the part number is appended with an asterisk, the part is serviceable by Motorola Depot only. If a parts list is not included, this generally means that no user-serviceable parts are available for that kit or assembly.

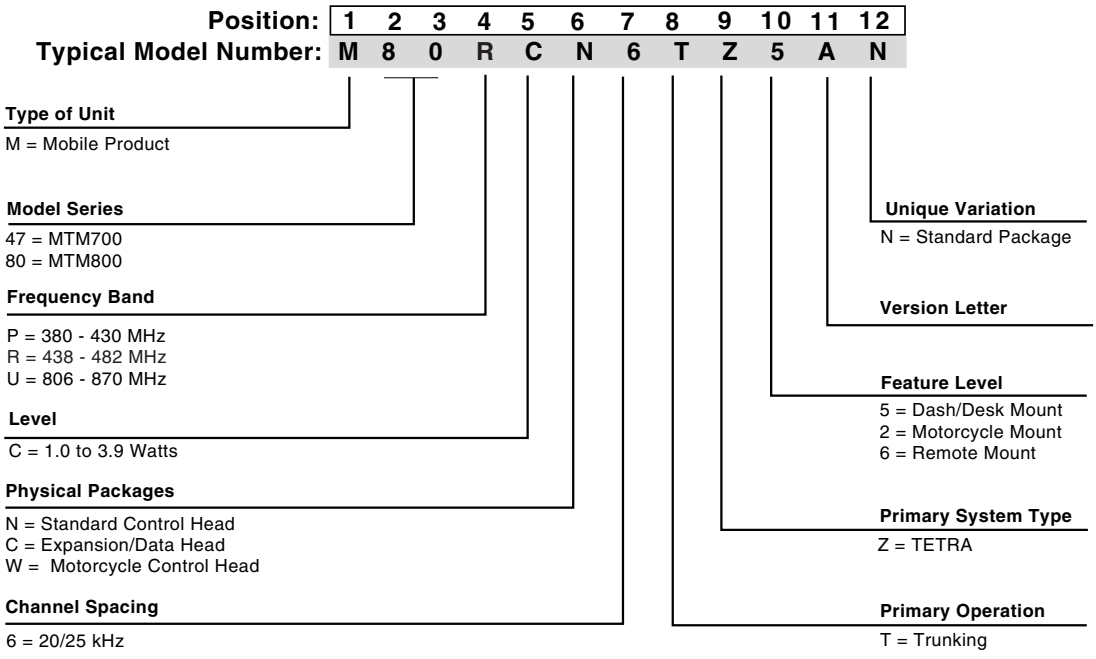
MODEL INFORMATION & ACCESSORIES

MTM700/MTM800 Mobile Terminal Model Information

This manual applies to the following Mobile Terminal Models

Type No.	Sales Model No.	Short Description	Model
MT912 MT712	M47PCN6TZ5_N M47UCN6TZ5_N	MTM700 380-430 MHz, STD DASH/DESK MTM700 806-870 MHz, STD DASH/DESK	M1
MT912M MT512M	M80PCN6TZ5_N M80RCN6TZ5_N	MTM800 380-430 MHz, STD DASH/DESK MTM800 450-470 MHz, STD DASH/DESK	
MT912 MT712	M47PCN6TZ6_N M47UCN6TZ6_N	MTM700 380-430 MHz, STD REMOTE MTM700 806-870 MHz, STD REMOTE	M2
MT912M MT512M	M80PCN6TZ6_N M80RCN6TZ6_N	MTM800 380-430 MHz, STD REMOTE MTM800 450-470 MHz, STD REMOTE	
MT912 MT712	M47PCC6TZ5_N M47UCC6TZ5_N	MTM700 380-430 MHz, EXP DASH/DESK MTM700 806-870 MHz, EXP DASH/DESK	M3
MT912M MT512M	M80PCC6TZ5_N M80RCC6TZ5_N	MTM800 380-430 MHz, EXP DASH/DESK MTM800 450-470 MHz, EXP DASH/DESK	
MT912 MT712	M47PCW6TZ5_N M47UCW6TZ2_N	MTM700 380-430 MHz, M'CYCLE MTM700 806-870 MHz, M'CYCLE	M4
MT912M MT512M	M80PCW6TZ2_N M80RCW6TZ2_N	MTM800 380-430 MHz, M'CYCLE MTM800 450-470 MHz, M'CYCLE	

Sales Model Nomenclature


Position: 1 2 3 4 5 6 7 8 9 10 11 12
Typical Model Number: M 8 0 R C N 6 T Z 5 A N
Type of Unit
M = Mobile Product
Model Series
47 = MTM700
80 = MTM800
Frequency Band
P = 380 - 430 MHz
R = 438 - 482 MHz
U = 806 - 870 MHz
Level
C = 1.0 to 3.9 Watts
Physical Packages
N = Standard Control Head
C = Expansion/Data Head
W = Motorcycle Control Head
Channel Spacing
6 = 20/25 kHz
Primary Operation
T = Trunking
Primary System Type
Z = TETRA
Feature Level
5 = Dash/Desk Mount
2 = Motorcycle Mount
6 = Remote Mount
Version Letter
Unique Variation
N = Standard Package

Model Specifications*

GENERAL		RECEIVER		TRANSMITTER	
ETSi:	ETS 300 394-1	**Receiver Type:**	Superheterodyne	**Modulation Type:**	π/4DQPSK
Type Number:		**Frequency Range:**		**RF Power:**	
MTM700/MTM800 UHF	MT912/MT912M	MTM700/MTM800	380-430 MHz	TMO	3,16 W / 35 dBm
MTM700 806-870 MHz	MT712	MTM700	851-870 MHz	DMO	3,16 W / 35 dBm
MTM800 450-470 MHz	MT512M	MTM800	450-470 MHz		
Temperature Range for Transceiver:		**Channel Spacing:**	25 kHz	**Frequency Range TMO:**	
Operating	-30°C to +60°C			MTM700/MTM800	380-430 MHz
Storage:	-40°C to +85°C	**Sensitivity (3.5%) BER:**	-112 dBm	MTM700	806-825 MHz
				MTM800	450-470 MHz
Power Supply:				**Frequency Range DMO:**	
Minimum:	10.8 Vdc	**Intermodulation:**	-47 dBm		
Nominal:	13.2 Vdc			MTM700/MTM800	380-430 MHz
Maximum:	15.6 Vdc	**Blocking (50-100 kHz):**	-40 dBm	MTM700	851-870 MHz
max. Current	approx. 3.5 A			MTM800	450-470 MHz
Dimensions (HxWxD) in mm:		**SpuriousRejection:**	-45 dBm	**Frequency Stability:**	
Transceiver	48.5 x 169.5 x 155	Adjacent Channel		Locked to Base	+/-100 Hz
Standard ControlHead	72 x 185 x 53	Interference Ratio:	-45 dB	Not Locked to Base	+/- 1 kHz
Weight in grams:		**Frequency Stability:**		**Spurious Emissions:**	
Transceiver MTM700	1350	Locked to Base	+/-100 Hz	Conducted/ Radiated	– 36 dBm <=1GHz
Transceiver MTM800	1370	Unlocked to Base	+/- 1 kHz		– 30 dBm > 1GHz
Standard Control Head	300	**Audio Rated** (@4 Ohms):		**Adjacent Channel Power Ratio** (@ ± 25kHz)	
		For External Speaker:	10 W		
		Distortion at Rated Audio:	5% Max.	380-430 MHz 806-825 MHz 450-470 MHz	– 60 dBc

*) Technical information may be subject to change without further notice.

Model Descriptions**

Model	Description
M1	Dash/Desk Mount with Mobile Terminal with Direct Mount Control Head, Speaker, Microphone or Handset, Standard User Guide, and Installation Accessories.
M2	Remote Mount with Mobile Terminal with Remote Mount Control Head, optional either with remote mount front housing or expansion control head, Speaker, Microphone or Handset, Remote Mount cables, Standard User Guide, and Installation Accessories.
M3	Expansion Mount with Mobile Terminal with Expansion Control Head, User Guide Data, and Installation Accessories.
M4	Motorcycle Mount with Mobile Terminal with Motorcycle Control Head, Expansion Control Head, Speaker, Microphone, Motorcycle Cables, Motorcycle User Guide, and Installation Accessories.

**) Other combinations are not recommend or not possible.

Accessories-To-Model Chart

ACCESSORIES					
Control Heads	**Part Number**	**M1**	**M2**	**M3**	**M4**
Standard Control Head	GMWN4062_	X	X		
Standard Control Head, cyrillic keypad	GMWN4310_	X	X		
Standard Control Head, Chinese (MTM700 with MR3.2b software only)	GMWN4187_	X	X		
Motorcycle Control Head	SDLN4506_				X
Motorcycle Control Head, Chinese (MTM700 with MR3.2b software only)	GMLN2001_				X
Expansion Head	GMCE4053_		X	X	X
Remote Mount Head	GMHN4080_		X		
Microphones	**Part Number**	**M1**	**M2**	**M3**	**M4**
Fist microphone	GMMN4063_	X	X		X
Desktop microphone	GMMN4064_	X	X		
Visor microphone	GMMN4065_	X	X		
Visor microphone, directional	GMMN4065_	X	X		
Loudspeakers	**Part Number**	**M1**	**M2**	**M3**	**M4**
Loud Speaker 13W	GMSN4066_	X	X		X
Small Loud Speaker 5W	GMSN4078_	X	X		X
Loudspeaker Extension Cable	GMKN4084_	X	X		X
Handset	**Part Number**	**M1**	**M2**	**M3**	**M4**
Telephone Style, Complete Handset	GMUN1006_	X	X		
Antennas	**Part Number**	**M1**	**M2**	**M3**	**M4**
Motorola offers a wide range of TETRA, GPS and combined TETRA/GPS antennas e. g.: Rooftop-, Covert Strip Glass-, Magnetic- Mount-, Wall-Mount-, Glass-Mount, Low Profile-, Motorcycle-Mount etc. antennas. Please refer to your local dealer or visit the Extranet site Motorola Online at: https://emeaonline.motorola.com		X	X	X	X
Mini U to BNC Adapter	5880367B28	X	X	X	X
PTT Switches	**Part Number**	**M1**	**M2**	**M3**	**M4**
Push button with remote PTT	RLN4857_	X	X		X
Tri-State Emergency Foot switch	RLN4836_	X	X		
Goose neck with PTT	RLN4858_	X	X		
Desktop Mount	**Part Number**	**M1**	**M2**	**M3**	**M4**
Desktop power supply	GPN6145_	X	X	X	

ACCESSORIES					
Desktop tray without loudspeaker	GLN7318_	X	X	X	
Power cable (for supply to desktop mobile)	GKN6266_	X	X	X	
Remote Mount	**Part Number**	**M1**	**M2**	**M3**	**M4**
Back Housing for Remote Mount	GMCN4060_		X		
Remote mount cable (terminal to C/H) - 3m	RKN4077_		X	X	X
Remote mount cable (terminal to C/H) - 5m	RKN4078_		X	X	
Remote mount cable (terminal to C/H) - 7m	RKN4079_		X	X	
Junction box	GMLN3002_	X	X	X	X
Cable Junction box -to- MTM700 - 6m	GMKN4192_	X	X	X	X
Cable Junction box -to- MTM700 - 4m	GMKN4193_	X	X	X	X
Cable Junction box -to- MTM700 - 2m	GMKN4194_	X	X	X	X
Remote Mount Kits with Control Head	**Part Number**	**M1**	**M2**	**M3**	**M4**
Remote Mount Kit 3m	PMLN4492_		X		
Remote Mount Kit 5m	PMLN4493_		X		
Remote Mount Kit 7m	PMLN4494_		X		
Remote Mount Exp. Kit 3m	PMLN4495_		X	X	
Remote Mount Exp. Kit 5m	PMLN4496_		X	X	
Remote Mount Exp. Kit 7m	PMLN4497_		X	X	
Power Cable	**Part Number**	**M1**	**M2**	**M3**	**M4**
US Linecord (3060665A04) packed	NTN7373AR	X	X	X	
Euro Linecord (3060665A04) packed	NTN7374AR	X	X	X	
UK Linecord (3002120F02) packed	NTN7375AR	X	X	X	
Argentina Linecord	NTN9246_	X	X	X	
Power Cables (to Mobile Terminal)	**Part Number**	**M1**	**M2**	**M3**	**M4**
12V Power Cable to Batt., 3m w. Fuse (10A)	GKN6270_	X	X	X	X
12V Power Cable to Batt., 6m w. Fuse (10A)	GKN6274_	X	X	X	X
Ignition Sense Cable, 3m with Fuse (4A)	HKN9327_	X	X	X	X
Fuse 10A	6500139767	X	X	X	X
Fuse 4A	65C80283E02	X	X	X	X
Installation	**Part Number**	**M1**	**M2**	**M3**	**M4**
External Alarm Relay	GKN6272_	X	X		X
Accessory Connector Kit	GMBN1021_	X	X	X	X
Buzzer Kit	GLN7282_	X	X		X
Mounting	**Part Number**	**M1**	**M2**	**M3**	**M4**
Key lock mount	RLN4779_	X	X	X	X
High Profile Mounting Bracket	GLN7317_	X	X	X	X

ACCESSORIES					
Low Profile Mounting Bracket	GLN7324_	X	X	X	X
DIN Mount Kit for Terminal Chassis	RLN4781_	X	X	X	
Motorcycle Cables	**Part Number**	**M1**	**M2**	**M3**	**M4**
Cable, M/C CH to Expansion Head Radio	3066516B01				X
Cable Kit, Transceiver to Microphone	GMKN4072_				X
Remote mount cable (terminal to C/H) - 3m	RKN4077_		X	X	X
Cable, M/C CH to Exp. Head Radio (Chinese)	3066516B02				X
Y-Adapter RJ45 10 Pos (Chinese)	GMKN4197_				X
Remote mount cable (terminal to Y-Adapt.) 0,5 m	GMKN4201_				X
Programming / Data	**Part Number**	**M1**	**M2**	**M3**	**M4**
Clear App. S/W TETRA-P Subscriber	PMVN4065_	X	X	X	X
TEA1 App. S/W TETRA-P Subscriber	PMVN4066_	X	X	X	X
TEA2 App. S/W TETRA-P Subscriber	PMVN4067_	X	X	X	X
Programming Cable	GMKN4067_	X	X	X	X
Active Data Cable (see following table [1])	GMKN1022_	X[1]	X[2]		
Interface Cable	GMKN4079_			X	
RS232 Interface Cable (for MTM700 only)	GMKN1016_	X	X	X	X
Service Tool	**Part Number**	**M1**	**M2**	**M3**	**M4**
Housing eliminator	6666500A01	X	X	X	X

1) Compatibility of Active Data Cable GMKN1022

Category	Model / Part No.	Description	Compatible Yes / No
Terminal Model: UHF MT912 MT912M	M47PCN6TZ5AN M80PCN6TZ5AN	MTM700 380-430 Dash/Desk MTM800 380-430 Dash/Desk	Yes with Rev. B Tanapas only Yes
	M47PCN6TZ6AN M80PCN6TZ6AN	MTM700 380-430 Remote MTM800 380-430 Remote	Yes [2] with Rev. B Tanapas only Yes
	M47PCC6TZ5AN M80PCC6TZ5AN	MTM700 380-430 EXP DASH/DESK MTM800 380-430 EXP DASH/DESK	No Yes
	M47PCW6TZ5AN M80PCW6TZ2AN	MTM700 380-430 M'cycle MTM800 380-430 M'cycle	No Yes
Terminal Model: 450MHz MT512M	M80RCN6TZ5AN	MTM800 450-470 Dash/Desk	Yes
	M80RCN6TZ6AN	MTM800 450-470 Remote	Yes
	M80RCC6TZ5AN	MTM800 450-470 EXP DASH/DESK	Yes
	M80RCW6TZ2AN	MTM800 450-470 M'cycle	Yes
Terminal Model: 800MHz MT712	M47UCN6TZ5AN	MTM700 806-870 Dash/Desk	Yes with Rev. B Tanapas only
	M47UCN6TZ6AN	MTM700 806-870 Remote	Yes [2] with Rev. B Tanapas only
	M47UCC6TZ5AN	MTM700 806-870 EXP DASH/DESK	No
	M47UCW6TZ2AN	MTM700 806-870 M'cycle	No
Kit	GMWN4062_	Std Control Head	No
	GMCE4053_	Data Expansion Control Head	No
	SDLN4506_	Motorcycle Control Head Kit	No

2) The cable, "GMKN1022", is only compatible when an Expansion Head is not fitted as part of a remote mount configuration. In this configuration access to the Tetra PEI for IP Packet Data and SDS services is available on the Expansion head and the Active Data Cable GMKN1022 is not required.

INSTALLATION

Introduction

General Information

NOTE **This product must be installed in a vehicle in accordance with the vehicle manufacturer's guidelines and the instruction detailed in this manual.**
Only the specified Motorola parts in this manual should be used. Failure to do so could result in non compliance to the Automotive Directive (72/245/EEC, as amended by 95/54/EC).

Note, for products fitted to two and three wheeled vehicles, Directive 97/24/EC applies.

This Terminal is only designed and certified to be used for terrestrial use only.

There are two methods of installing the mobile terminal in a vehicle:

1. Using the direct mounting trunnion and power cables supplied with a standard radio package.
2. Remote mounted in the car radio cut-out (using the required DIN mounting kit RLN4781A), per ISO7736.

An accessory connector on the rear of the terminal enables you to attach different accessories (see section "Accessory Connection Plan").

A 10-pin telephone type connector (TELCO) on the front control head panel (see page 67) provides for the connection of various types of microphones (fist microphone GMM4063, desktop microphone GMMN4064, telephone style handset GMUN1006).

TERMINAL SPECIFIC NOTE **This terminal is ONLY made for 12 V power supply connection. In vehicles with 24 V power supply, a DC/DC converter is required.**

Please be aware when planning the installation that there is a current consumption of approx. 3.5A during PTT and even 30mA when terminal is switched off."

1. Mount the terminal horizontally near the driver, so the driver can easily view, access and operate the controls and accessories.
2. Ensure that the location is not exposed to dirt and moisture.
3. Verify that there will be sufficient space around the mobile unit for air flow and installation.
4. Check that there is enough routing space for the power cable connector and the antenna coaxial cable.
5. Plan the best place to run connections to minimize pinching, crushing, and overheating of wires and cables.

NOTE **In a vehicle with an airbag, make sure that the mounting location of the mobile terminal, or of any terminal accessory, is not in the deployment path of the air bag.**

DC Power Cable Installation

Installation Planning

CAUTION: This terminal must be operated only in negative ground electrical systems. Operating the terminal on a positive ground system will cause the cable fuse to short-circuit. Check the vehicle ground polarity before you begin the installation.

The 3 meters (10 feet) DC power cable shipped with the terminal should be long enough to be installed in most vehicles. Take the following precautions before you begin:

1. Whenever possible, avoid routing the cable above the catalytic converter.
2. Make sure that the power cable never rests on sharp edges.
3. Use grommets whenever a cable has to pass through a hole in a metal panel.

The following table lists power cables available for this terminal:

Table 1 DC Power Cables

Number	Description	Rating
GKN6270	Power Cable to battery with fuse 10A	12V Power Cable to Battery, Length: 3 m
GKN6274	Power Cable to battery with fuse 10A	12V Power Cable to Battery, Length: 6 m
HKN9327 *	Ignition Sense Cable with fuse 4A	Ignition Sense Cable, Length: 3 m
6500139767	Fuse 10A for Power Cable	
6580283E02 *	Fuse 4A for Ignition Sense Cable	

* For more information refer to section “Ignition Sense Cable”. The Ignition Sense Cable allows the terminal to be turned on and off by the vehicle ignition switch.

In case of blown fuses ONLY replace those with identical value.
NEVER insert different values.

Installation Procedure

Begin the DC power cable installation as follows:

1. Determine a routing plan, keeping in mind where the terminal is to be mounted and make sure that the cable does not rest on sharp edges.

Caution

CAUTION: Improper handling with the power cable may cause shorting to ground. Ensure that during terminal installation the power cable fuse is removed.

2. Locate an existing hole with grommet in the vehicle fire wall, or use a 9.5 mm (3/8-inch) bit to drill an access hole in the fire wall. Install a grommet with a 5 mm (3/16-inch) inside diameter into the hole to protect the power cable.

Caution

CAUTION: Be very careful not to damage existing wires.

3. From inside the vehicle, feed the red and black leads (without the lugs attached) through the access hole and into the engine compartment. (see Figure 1)

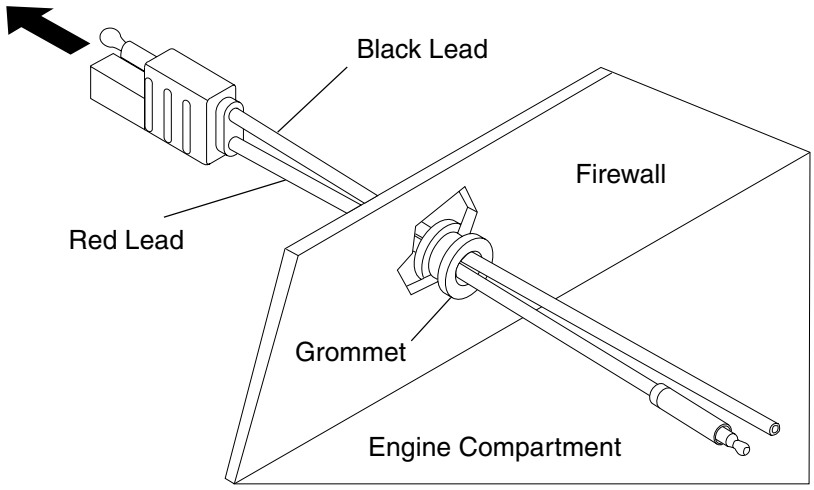


Figure 1 Power Cable Routing into the Engine Compartment

4. Connect the black lead of the DC power cable to the nearest vehicle chassis ground point (using the provided ring lug if necessary). Shorten the black lead to remove any excess cable. (see Figure 2 Power Cable Assembly).

NOTE **Locate a good vehicle ground point. The vehicle frame provides the best ground. Optimum terminal performance can only be achieved with a very low resistance ground connection. Verify that the connections between the battery negative terminal, vehicle chassis, and engine block have low resistance.**

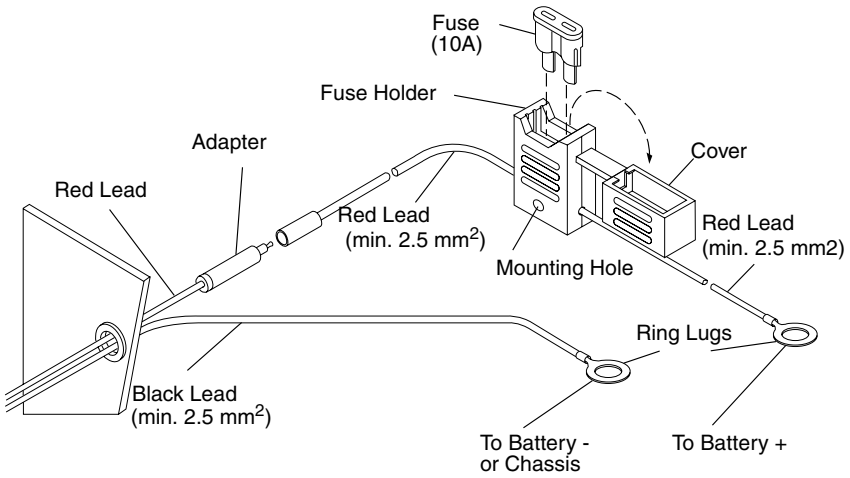


Figure 2 Power Cable Assembly

5. Place the fuse holder close to the battery. Ensure that it is not near any hot engine component. Mount the fuse holder using its mounting hole and dress the wires as required.
6. Insert the stripped end of the red lead of the fuse holder into the ring lug hole and crimp it. Connect the fuse holder red adapter lead plug to the mating receptacle on the red lead of the power cable.
7. Connect the red lead ring lug from the fuse holder to the positive (+) battery terminal. Make sure the adapter cable is connected to the main power cable red lead.
8. Carefully check that all connections are proper. Insert the fuse into the fuse holder and close the cover.

Ignition Sense Cable Installation

Table 2 Ignition Sense Cable

Number	Description	Rating
HKN9327	Ignition Sense Cable with fuse 4A	Ignition Sense Cable, Length: 3 m
6580283E02	Fuse 4A for Ignition Sense Cable	

The HKN9327 Ignition Sense Cable allows the terminal to be turned on and off by the vehicle ignition switch.

The ignition sense cable kit contains a thin cable and a fuse holder. To install the cable, carry out the following steps.

Caution

In case of blown fuses ONLY replace those with identically value.
NEVER insert different values.

Ensure that during cable installation the fuse is removed.

1. Plug the lead of the Ignition Sense Cable with the crimped on terminal into #10 socket of the accessory plug.
2. Route and secure the cable with attached tie wrap.
3. Connect the other lead of the accessory cable to the ignition switch of the vehicle.
4. Insert the fuse into the fuse holder and close the cover.

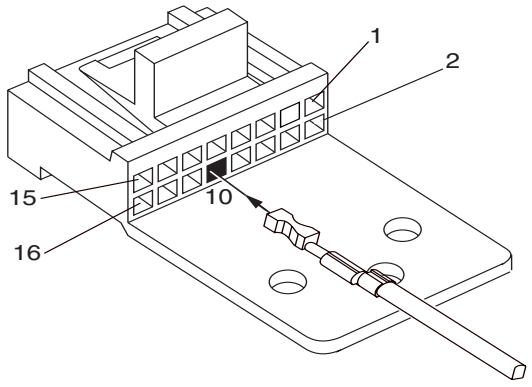


Figure 3 Accessory Connector with Ignition Sense Cable

Terminal Installation

Standard Control Head Installation

The Standard Control Head can be removed from the housing and turned to any position within a 180° radius. This provides multiple mounting options for the terminal. For example, the terminal may be mounted on either side of the vehicle to facilitate the safest and most ergonomically ideal position. The Standard Control Head may then be turned to provide the most convenient access.

To reposition the Standard Control Head:

1. Insert the Dismantling tool (Motorola P/N 6686119B01) in the groove between the Standard Control Head and the terminal assembly as shown in the Figure.
2. Press on the dismantling tool until the snap connectors on the side of the Standard Control Head release from the terminal assembly.
3. Pull the Standard Control Head away from the terminal assembly.

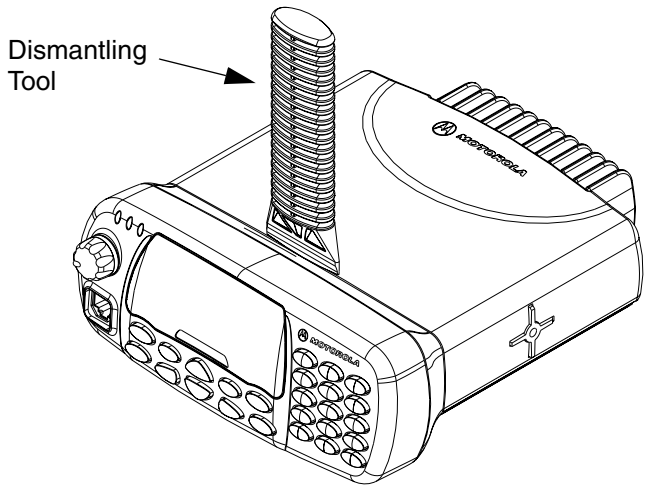


Figure 4 Typical Control Head Removal

Trunnion Installation

Installation Planning

The trunnion allows the terminal to be mounted to a variety of surfaces.

1. The trunnion must be securely fixed to the vehicle chassis.
2. Ensure the surface can support the weight of the terminal.
3. Although the trunnion can be mounted to a plastic dashboard, it is recommended that the mounting screws be located so they penetrate the supporting metal frame of the dashboard.

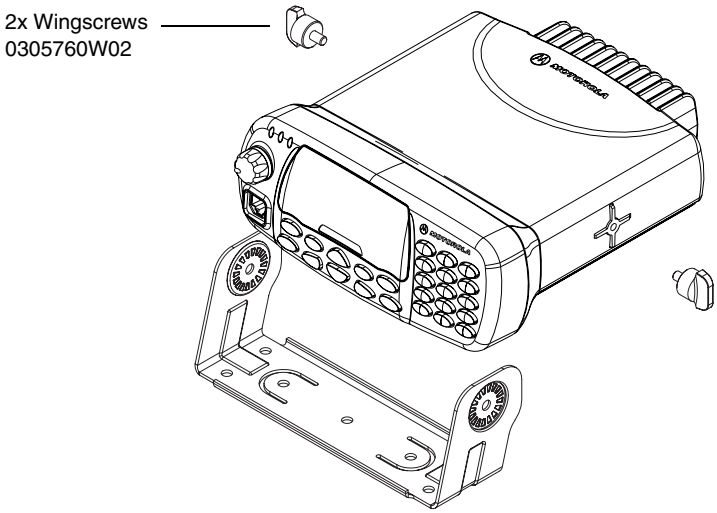


Figure 5 Terminal into High Profile Trunnion (GLN7317)

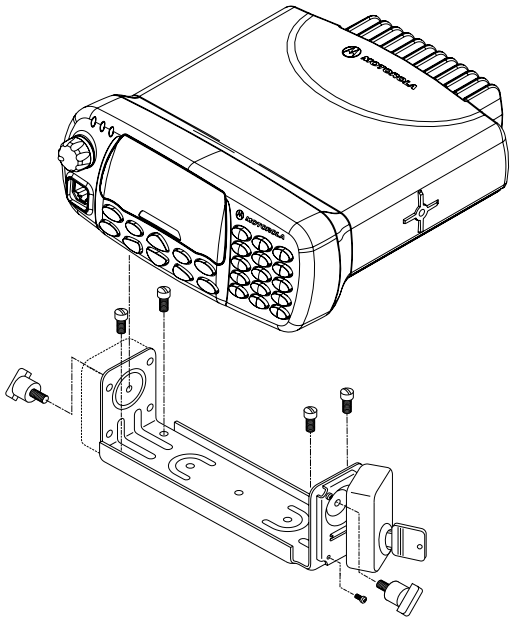
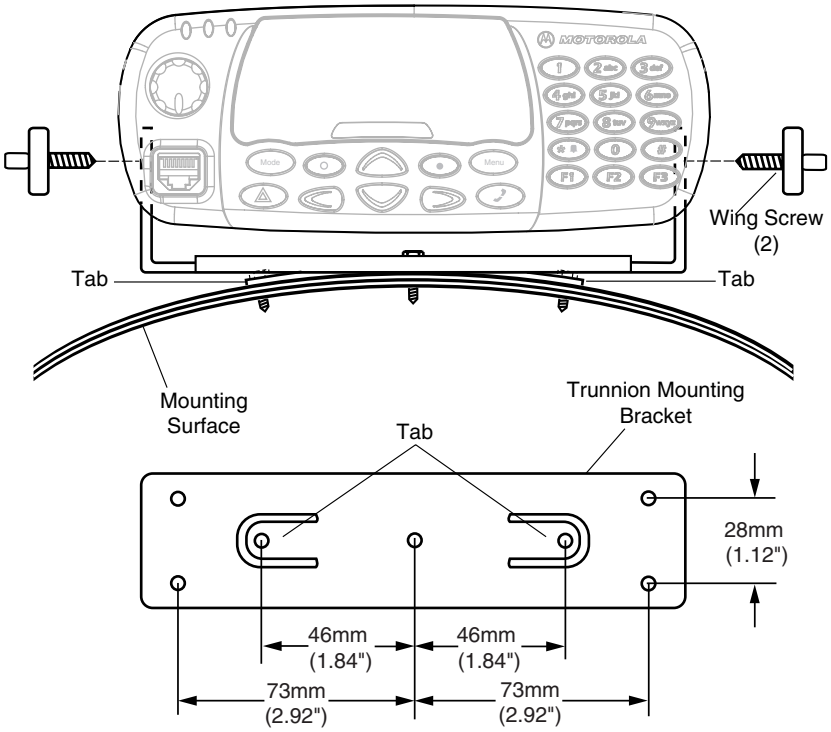


Figure 6 Terminal into Key Locked Mount Trunnion (RLN4779A)

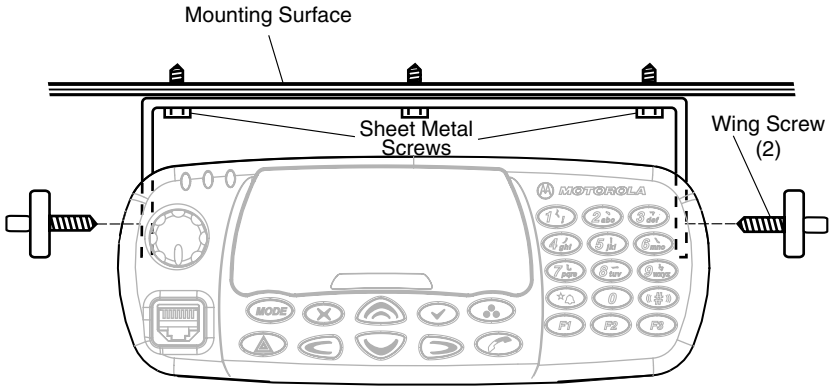
Installation Procedure

1. Select either the transmission hump or an open underneath portion of the dash to mount your terminal. (See Figure 7 Transmission Hump Mounting (Top) and Below Dash Mounting (Bottom)). When mounting the trunnion on the transmission hump, be careful that the transmission housing is not affected.
2. Use the trunnion mounting bracket as a template, to mark the hole positions on the mounting surface. Use the innermost three holes for a curved mounting surface, such as the transmission hump, and the three outermost holes for a flat surface such as under the dash.
3. Center-punch the spots you marked and use a 4 mm (5/32-inch) bit to drill a hole at each location.
4. Secure the trunnion mounting bracket to the mounting surface with the three self-tapping screws provided. (See Figure 7 Transmission Hump Mounting (Top) and Below Dash Mounting (Bottom)).
5. Slide the terminal into the trunnion. Secure the terminal with the two wing screws provided.

TRANSMISSION HUMP MOUNTING



BELOW DASH MOUNTING



Note: The keypad labeling of the control head may vary according to the specific customer/country concerns.

Figure 7 Transmission Hump Mounting (Top) and Below Dash Mounting (Bottom)

Desktop Installation

The MTM700/MTM800 may be desktop mounted. The Desktop Station option provides the terminal with the desk microphone, power supply, desk top tray (without speaker) and external loudspeaker. A separate data device can be connected via the 7-pin Expansion connector on the rear side (located above the 20-pin accessory connector as shown in figure 8).

Caution

Note: If an outdoor antenna is used a proper grounded **Lightning Protector with Quarter-Wave Shorting Stub** must be inserted between the outdoor antenna and the transceiver antenna input. The line voltage power supply shall have a proper ground connection (refer to IEC61312-1). The installation must meet the requirements of any and all applicable local codes and regulations.

Planning

Planning is the key to fast, easy terminal installation. Before a hole is drilled or a wire is run, inspect the location and determine how and where you intend to mount the antenna, terminal and accessories. Plan wire and cable runs to provide maximum protection from pinching, crushing, and overheating. The installation planning should only be undertaken by persons who are competent and able to ensure that the complete installation fulfils its regulatory requirements, such as EMC (Electro Magnetic Compatibility) and IEC (International Electrotechnical Commission).

Installation

1. Be sure line voltage power is available.
2. Make sure sufficient air can flow around the terminal to permit adequate cooling.
3. Choose a flat surface for the desktop tray and external loudspeaker.
4. Be sure the mounting surface is able to adequately support the weight of the terminal and tray.
5. If an outdoor antenna is used choose a location for the terminal as close as possible to the antenna cable inlet of the building. Make sure that the installation of the surge protector is in accordance with the manufactures' specifications and safety hints. The line voltage power supply shall be grounded properly.

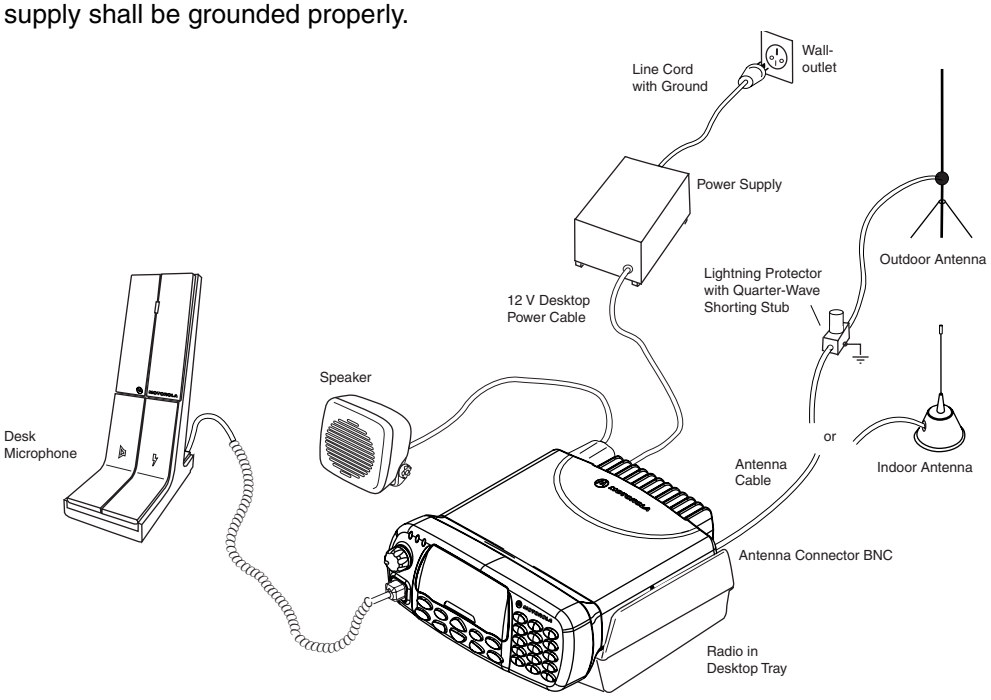


Figure 8 Desktop Mounting (Part Numbers see following table)

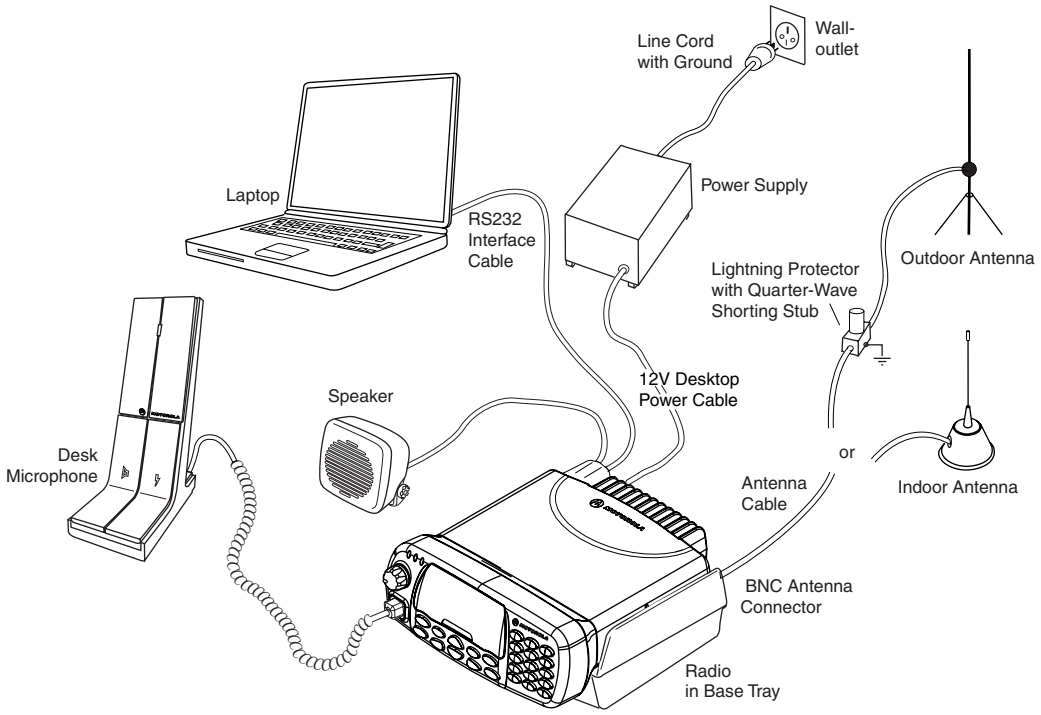


Figure 9 Desktop Mounting with Data Device

Table 3 Associated Components

Item	Description	Part Number
1	Desktop Microphone	GMMN4064
2	External Speaker 13 W	GMSN4066
3	Small Loudspeaker 5 W	GMSN4078
4	Desktop Tray w/o speaker	GLN7318
5	12V Desktop Power Cable	GKN6266
6	Power Supply Unit PSU	GPN6145_
7	110V PSU Line Cord US	NTN7373_R
8	230V PSU Line Cord Euro	NTN7374_R
9	240V PSU Line Cord UK	NTN7375_R
10	220V PSU Line Cord Argentina	NTN9246_
11	RS232 Interface Cable to adapt the Data Device (MTM700 only)	GMKN1016
12	Lightning Protector with Quarter-Wave Stub Protector in the appropriate frequency range (e.g. HUBER+SUHNER® : type 3400.17.0389 (UHF) or type 3400.17.0277 (800MHz)	

Dashboard Installation

TERMINAL SPECIFIC NOTE

Installation in the dashboard is only possible when the Transceiver Box is assembled with a Remote Mount Head or a Expansion Head.

Dashboard Installation of the Transceiver Box equipped with a Standard Control Head is NOT possible !

Installing the Radio in an Automotive Dashboard

1. Open out the radio cut-out in the dashboard.
2. Remove the top plastic cover off the radio.
3. Insert the mounting frame into the cut-out and retain it by bending back the relevant fixing tabs, using all 6 where possible, to hold it in place.

RADIO SPECIFIC NOTE

The tabs are easily bent back by twisting a large flat-bladed screwdriver in the slot behind the tabs.

For a more secure installation the top and rear of the frame should also be secured with screws.

The demount tool can be used as an aid to mounting as well as demounting.

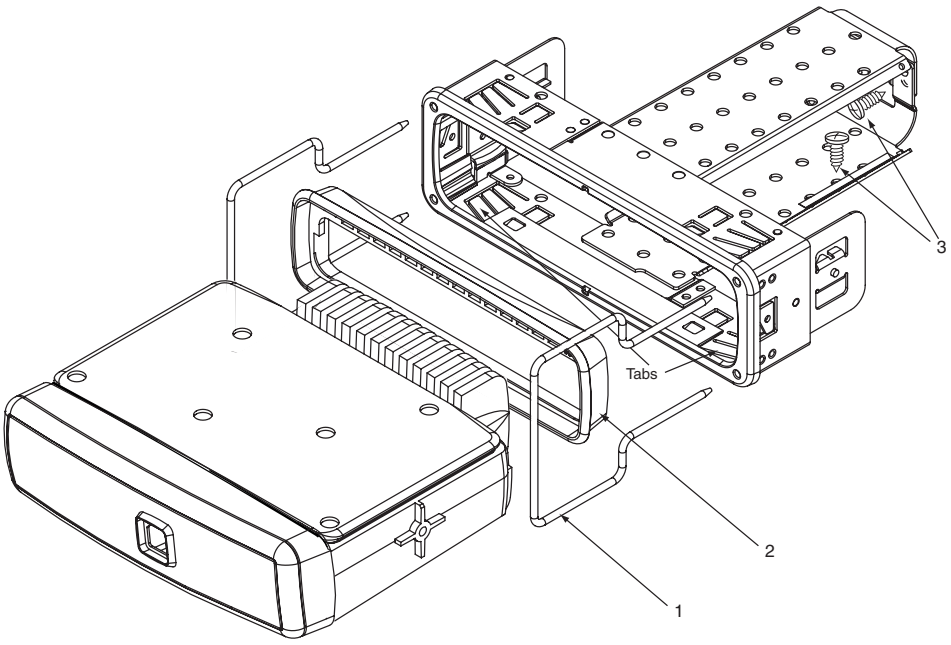


Figure 10 Mounting the Radio into the Dashboard (shown with Remote Mount Head)

Mounting the Radio in the Frame

1. Provide the electrical connections to the radio for power, antenna and accessories.

2. Plug in all the connectors and push the radio with its Remote Mount Head or alternatively the Expansion Head firmly into the mounting frame until the two springs snap into place.

RADIO SPECIFIC NOTE

The fixing tabs should be checked for tightness each time the radio is removed. The tabs are easily tightened by twisting a large flat-bladed screwdriver in the slot behind the tabs.

The frame is not designed for daily mounting and demounting.

Remove the Radio from the Frame

1. Push the two demount tools through the openings in the frame until the two springs release.
2. Slide out the Radio.

Table 4 DIN Mount Kit Components

Item	Description	Part Number
	DIN Mount Kit	RLN4781_
1	Demount Tool	8164298B01
2	Silicon Rubber	3285955Z01
3	Screws to secure the frame	0312002B14

Remote Mount Installation

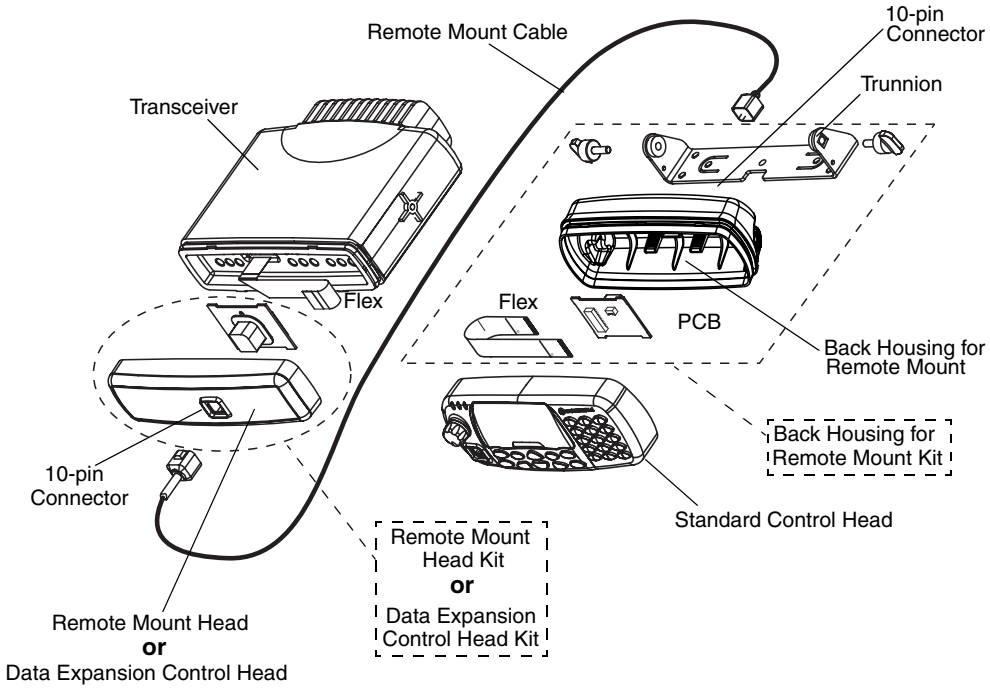


Figure 11 Remote Mount Installation with Remote Mount Head

Table 5: Associated Components Remote Mount Kit

Description		Part Number
Remote Mount Kit, 3 m		PMLN4492_
	Remote Mount Head Kit	GMHN4080_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 3 m	RKN4077_
	Speaker Extension Cable	GMKN4084_
Remote Mount Kit, 5 m		PMLN4493_
	Remote Mount Head Kit	GMHN4080_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 5 m, shielded	RKN4078_
	Speaker Extension Cable	GMKN4084_
Remote Mount Kit, 7 m		PMLN4494_
	Remote Mount Head Kit	GMHN4080_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 7 m	RKN4079_
	Speaker Extension Cable	GMKN4084_

Table 6: Associated Components Remote Mount Expansion Kit

Description		Part Number
Remote Mount Expansion Kit, 3 m		PMLN4495_
	Data Expansion Control Head Kit	GMCE4053_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 3 m	RKN4077_
	Speaker Extension Cable	GMKN4084_
Remote Mount Expansion Kit, 5 m		PMLN4496_
	Data Expansion Control Head Kit	GMCE4053_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 5 m	RKN4078_
	Speaker Extension Cable	GMKN4084_
Remote Mount Expansion Kit, 7 m		PMLN4497_
	Data Expansion Control Head Kit	GMCE4053_
	Back Housing for Remote Mount Kit	GMCN4060_
	Remote Mount Cable, 7 m	RKN4079_
	Speaker Extension Cable	GMKN4084_

Caution

CAUTION: The 10 pin Telco connector can only be used to connect a remote mount Standard Control Head. Connecting any other accessories (e.g. microphone) might result in malfunctioning hardware failure.

Assembling the Back Housing for Remote Mount to the Standard Control Head

1. Remove the Standard Control Head from the Transceiver by inserting the dismantling tool (Motorola part number 6686119B01) in the recess between the Standard Control Head and the Transceiver.
2. Remove the flex from the Transceiver only.
3. Press the dismantling tool until the snap connectors on the side of the back housing release from the Standard Control Head.
4. Split the Standard Control Head into front and back housings by inserting the demount tool in the recess between them.

NOTE **To minimize cosmetic damage disassemble from the bottom side (label side).**

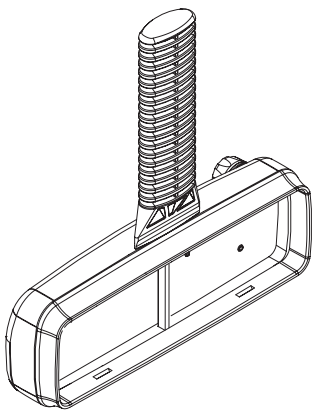


Figure 12 Control Head Back Housing Removal

5. Connect the flex from the Standard Control Head to Remote Back Housing PCB.

NOTE **For correct orientation of the flex align the “dot” on the flex with the ‘O’ on the PCB.**

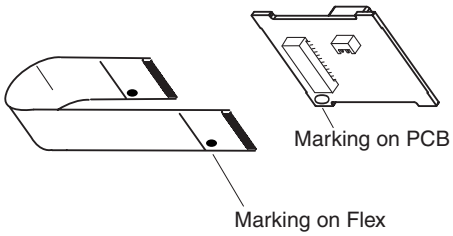


Figure 13 Orientation of Flex to PCB

6. Press the Standard Control Head onto the Remote Back Housing until **ALL** the tabs snap into place.

Assembling the Remote Front Housing to Transceiver Box

1. Connect the flex from the Remote Front Housing PCB to the top small connector of the Transceiver Box.

NOTE **For correct orientation of the flex align the ‘dot’ on the flex with the ‘O’ on the PCB. Also align the“dot“ on the flex with the“O“ on the chassis of the Transceiver Box.**

2. Press the Remote Front Housing to the Transceiver Box until **ALL** the tabs snap into place.

Installing the Remote Standard Control Head

1. Position the trunnion in the desired location and mark the positions of the mounting holes using the trunnion mounting bracket as a template. Be careful that the housing is not affected.
2. Centrepunch the marked spots and drill 4mm (5/32-inch) holes at each spot.
3. Fix the trunnion in position using the supplied screws.
4. Route the Remote Cable as required, feeding it through the bracket (a 20mm hole is required for the cable plug).
5. Push the cable plug into the Remote Front and Back Housing until it snaps into place.
6. Snap the assembly into the trunnion.
7. Adjust the assembly as required then fix it in position with the wing screws supplied.

Remote Mount Installation

(Remote Mount with Junction Box)

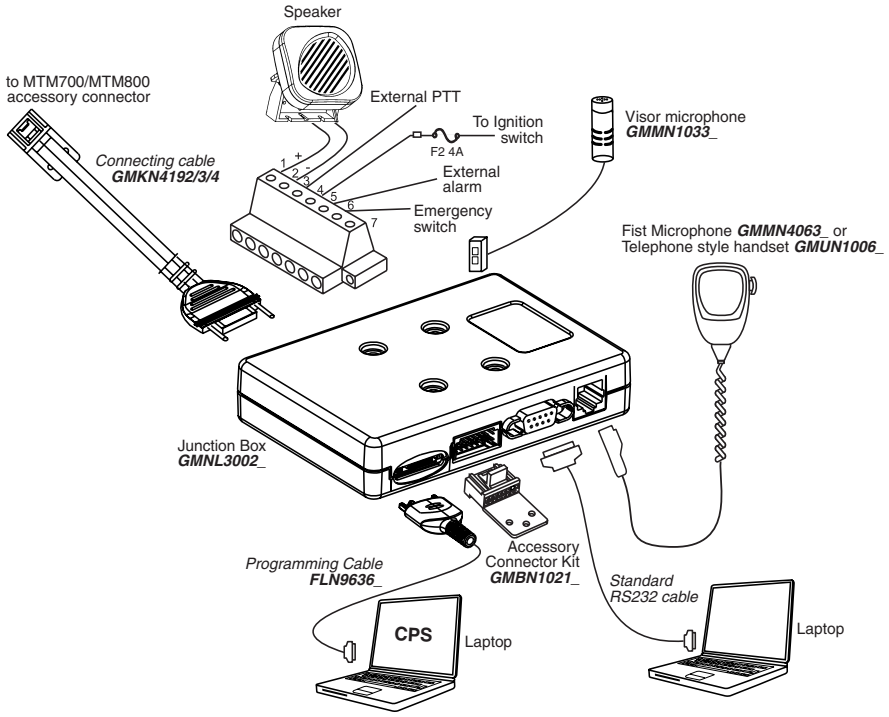


Figure 14 Remote Mount Installation with Junction Box

General

The junction box (GMNL3002_) assists the easy installation for dash and remote mount configurations. It furthermore provides access to the radio for flashing and keyloading of Universal Cryption Module (UCM) encryption keys.

The junction box enables the customer adding a laptop to the remote configuration, connecting a visor microphone, various accessories or fist microphone.

Installation

The junction box can be installed horizontally and vertically. Secure the junction box by screwing the four supplied screws straight into the location as shown in the figure below. Use the connecting cable (1) for installation purposes.
Ingress Protection (IP) Code: IP30
The junction box has no connector sealing and is designed for use in dust and water protected location only.

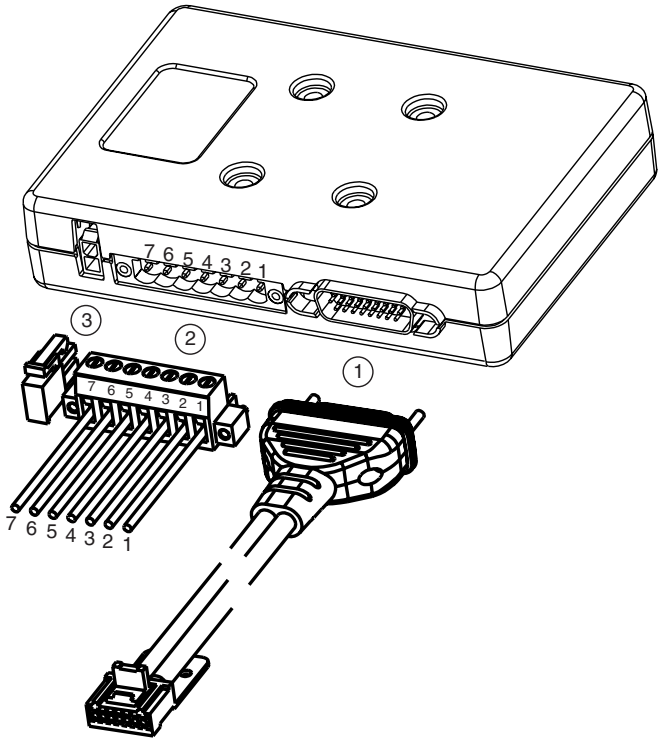
1. Secure the junction box (GMNL3002_) with the four screws supplied with kit.
2. Connect the connection cable GMKN4192_ (length = 6 m), GMKN4193_ (length = 4 m) or GMKN4194_ (length = 2 m) from the junction box to the accessory connector on the rear side of the transceiver and fasten it with the plug-screws.
   The cable which will be used for installation purposes only must be ordered separately.
3. All other devices should be adapted as shown in figure 14.

Service

The junction box pcb is not repairable. Please order a new junction box as necessary.

Connections

1. Connect all accessories to the junction box.
2. Connect the mobile-terminal-to-Junction box cable to the junction box.
3. Connect the programming cable to the junction box (if required).



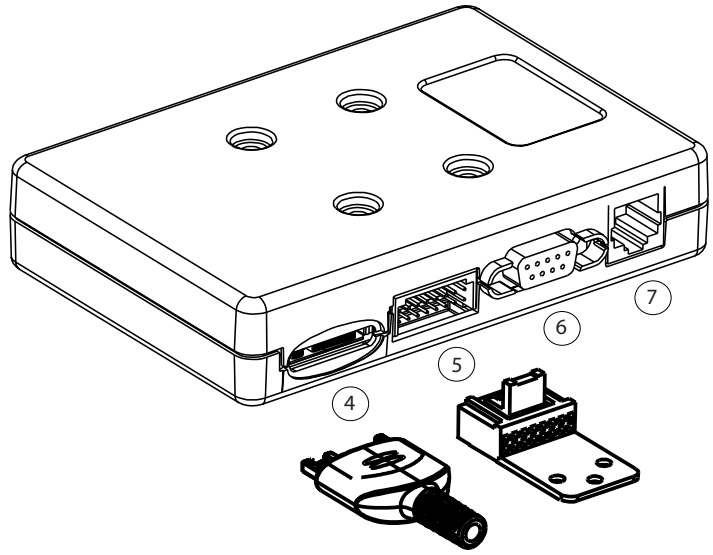
1 = Connecting cable from Junction Box to MTM700/MTM800 (rear side accessory connector) for installation purpose only.

GMKN4192 (length 6 m)
GMKN4193 (length 4 m)
GMKN4194 (length 2 m)

2 = Connector for accessory terminal
pin 1 SPEAKER +
pin 2 SPEAKER -
pin 3 EXT_PTT
pin 4 IGNITION SENSE
pin 5 EXT_ALARM
pin 6 EMERGENCY
pin 7 GND

3 = Connector for visor microphone

Figure 15 Connectors on the Junction Box (Front panel)



4 = Connector for programming cable FLN 9636

5 = Connector for accessory connector kit GMBN1021

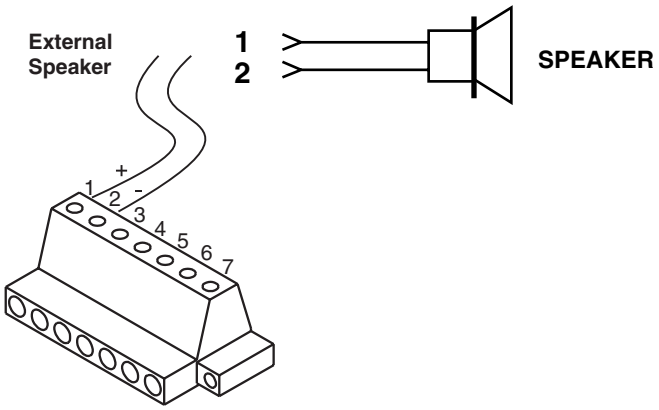
6 = Connector for adapting a laptop via RS232 cable

7 = TELCO-connector for fist microphone (GMMN4063_) or telephone style handset (GMUN1006_)

Figure 16 Connectors on the Junction Box (Rear Panel)

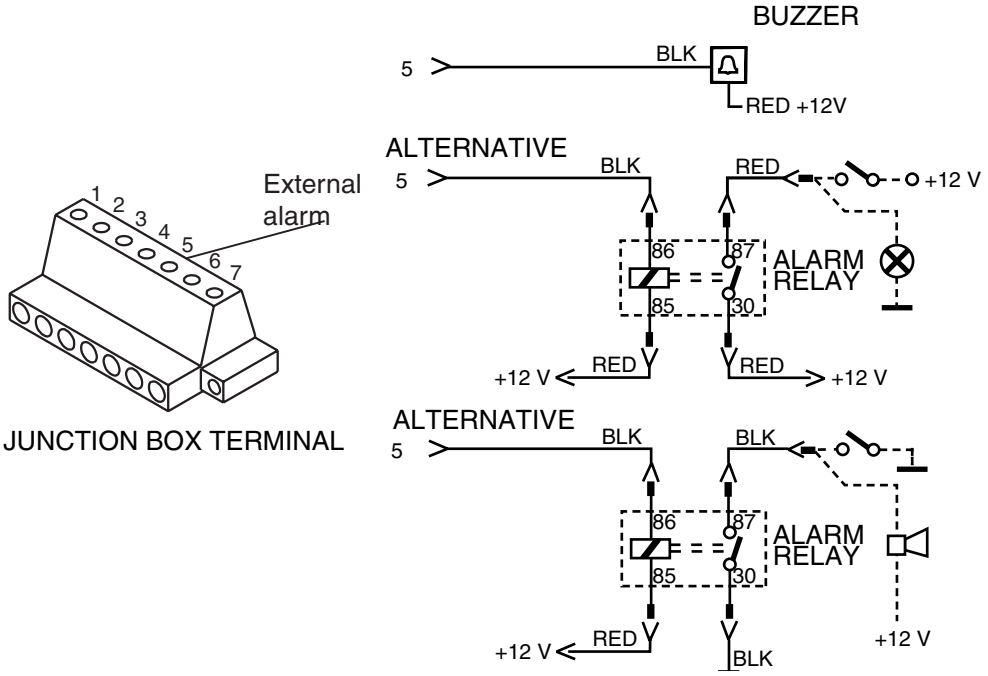
Connection Plan for Junction Box Accessory Terminal

Connection Plan for Speaker



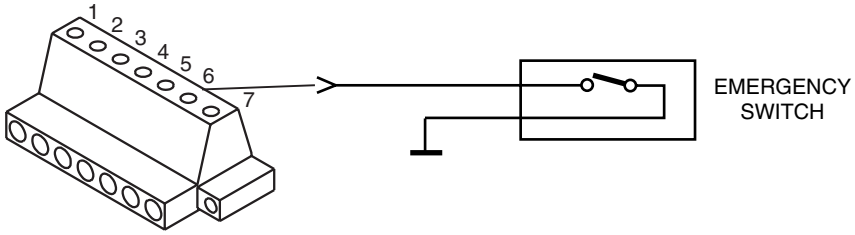
JUNCTION BOX TERMINAL

Connection Plan for Alarm Relay



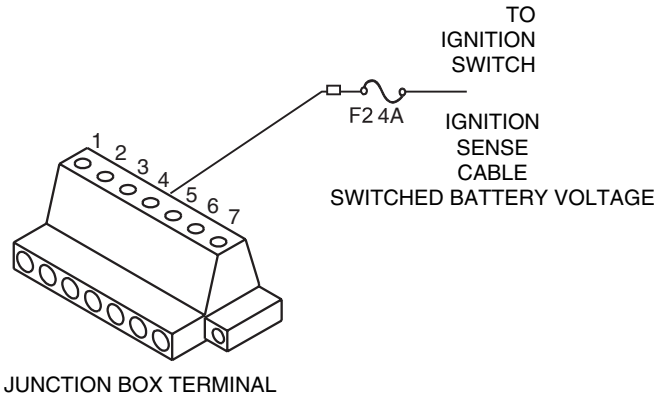
JUNCTION BOX TERMINAL

Connection Plan for Emergency switch



JUNCTION BOX TERMINAL

Connection Plan for Ignition Sense Cable

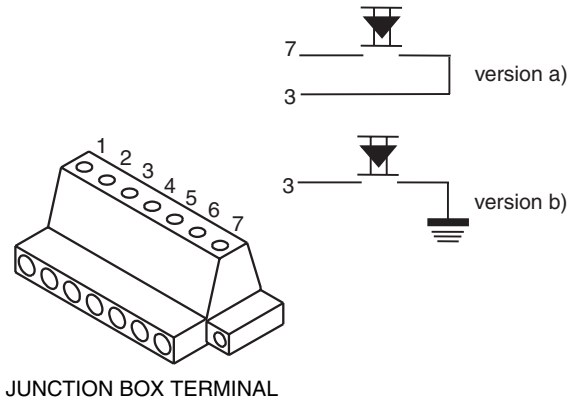


The ignition sense cable HKN9327 allows the MTM700/MTM800 to be turned on and off by the vehicle ignition switch.

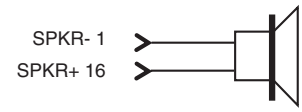
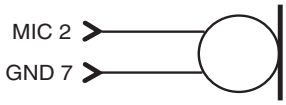
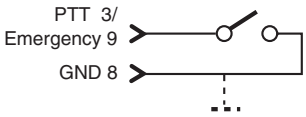
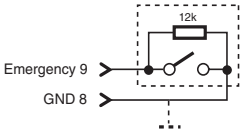
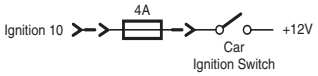
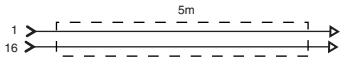
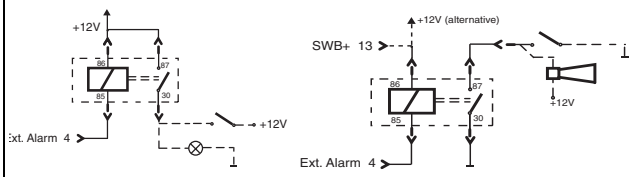
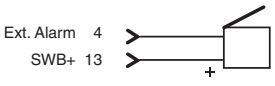
To install the cable, carry out the following steps.

1. Connect the stripped lead of the fuse holder cable only to an ignition switched terminal of the fuse block. Use the supplied terminal or any other suitable terminal.
2. Mount the fuse holder using the mounting hole, and dress wires as required.
3. Cut the thin cable to the required length, crimp the supplied red lead to the stripped lead of the thin cable, and connect it to the blue terminal of the fuse holder cable.
4. Connect the other end of the ignition sense thin cable to pin 4 of the junction box terminal.
5. Insert the provided fuse into the fuse holder and close the cover.

Connection Plan for External PTT



Connection Plan for Accessory Connector Kit (GMBN1021)

Part Number / Description	Cable Connectivity
GMSN4066 Speaker 13W **GMSN4078** Speaker 5W	
GMMN4065 Visor Microphone **GMMN1033** Visor Microphone, omni directional *Can NOT be used if connector 7 (TELCO) is in use!*	
RLN4856 Foot switch PTT **RLN4857** Push button PTT **RLN4858** Gooseneck PTT *These accessories could be used for PTT or Emergency function.*	
RLN4836 Tri-State Emergency Foot switch & Cable	
HKN9327 Ignition Sense Cable	
GMKN4084 Speaker Extension Cable	
GKN6272 External Alarm Relay and Cable	
GLN7282 Buzzer	

Radios with expansion head (expansion head remote, motorcycle and databox models):
To use a junction box with one of the MTM700/MTM800 mobile terminals fitted with an expansion head, always use the 9-pin RS232 port on the expansion head for PEI instead of the 9-pin RS232 port on the junction box (connector 6). Ensure to fit a jumper between pins 6 & 15 of the Junction Box (connector 5) for the PEI to operate correctly in this configuration.

Standard radios without expansion head (dash/desk/standard remote models):
For standard MTM700/MTM800 mobile terminals without an expansion head, the jumper between pins 6 - 15 of the junction box (connector 5) should be removed.

Table 7 Jumper on Accessory Connector

MTM700/MTM800 Mobile Terminal	Fit Jumper Pins 6-15 ?	Use Junction Box RS232 PEI ?
With Expansion Head (Expansion Head remote, Motorcycle or Databox)	Yes	No Use expansion head 9-pin PEI instead.
Without Expansion Head (dash, desk, or standard remote)	No	Yes

Expansion Head Radio Installation

General

The Expansion Head Radio is a kit consisting of the MTM700/MTM800 transceiver-box and an Expansion Head, which fits onto the front of the MTM700/MTM800 mobile terminal transceiver. The Expansion Head Radio is used e.g. when the transceiver-box is controlled by a

- **Motorcycle Control Head** where the Motorcycle Control Head interfaces to the SB9600 port of the Expansion Head or via Y-Adapter to the ESBEB port (Chinese version Motorcycle Control Head).

- Remote **Standard Control Head** when access to the full 8-wire RS232 interface of the Expansion Head is also required.

- **Control Terminal** via the SB9600 interface for e.g. PC based dispatch solutions or train/bus applications where a Standard Control Head is not required.

The Transceiver-box with its Expansion Head can be mounted in the vehicles DIN size opening.

In case of motorcycle operation (e.g. public safeties) the Expansion Head Radio is mounted in a separate trunnion which is not part of the Expansion Head Radio kit.
In this installation version the radio unit (Transceiver with Expansion Head) is mounted at the back of the motorcycle and the control head is mounted at the front on the fuel tank or the handlebars.

Expansion Head Radio with Motorcycle Control Head

Planning

Planning is the key to fast, easy radio installation. Before a hole is drilled or a wire is run, inspect the vehicle and determine how and where you intend to mount the antenna, radio, and accessories. Plan wire and cable runs to provide maximum protection from pinching, crushing, and overheating.

The installation planning should only be undertaken by persons who are competent and able to ensure that the complete installation fulfils its regulatory requirements, such as EMC (ElectroMagnetic Compatibility).

The following list of considerations should, as a minimum, be checked during installation planning:

1. The recommended place for the transceiver is to place it in the box at the back of the motorcycle.
2. Mount the control head horizontally at a position which enables the driver to view the controls and operate them easily.
3. Be sure the control head is close enough to the vehicle operator to permit easy access to operating controls.
4. It is recommended to mount the control head directly on the chassis or handle part.
5. Ensure that the units mounted in the motorcycle box are protected from dirt and moisture.
6. Ensure that the radio trunnion is grounded.

7. Ensure that the control head and the control head trunnion are grounded.
8. Verify that there is sufficient space around the units to allow air flow and removal.
9. Verify that the cable from a handlebars mounted control head and to the radio unit is long enough to allow for the handles to be turned.
10. Verify that the antenna cable is routed in the shortest way to minimize power loss over the cable.
11. Check that the mounting surfaces are able to support the weight of the units.

Note: If an additional GPS antenna or a combined TETRA/GPS antenna is used, the antenna housing carries the GPS receiver. Take care not to cover the antenna housing with metal or other radio wave absorbing material.

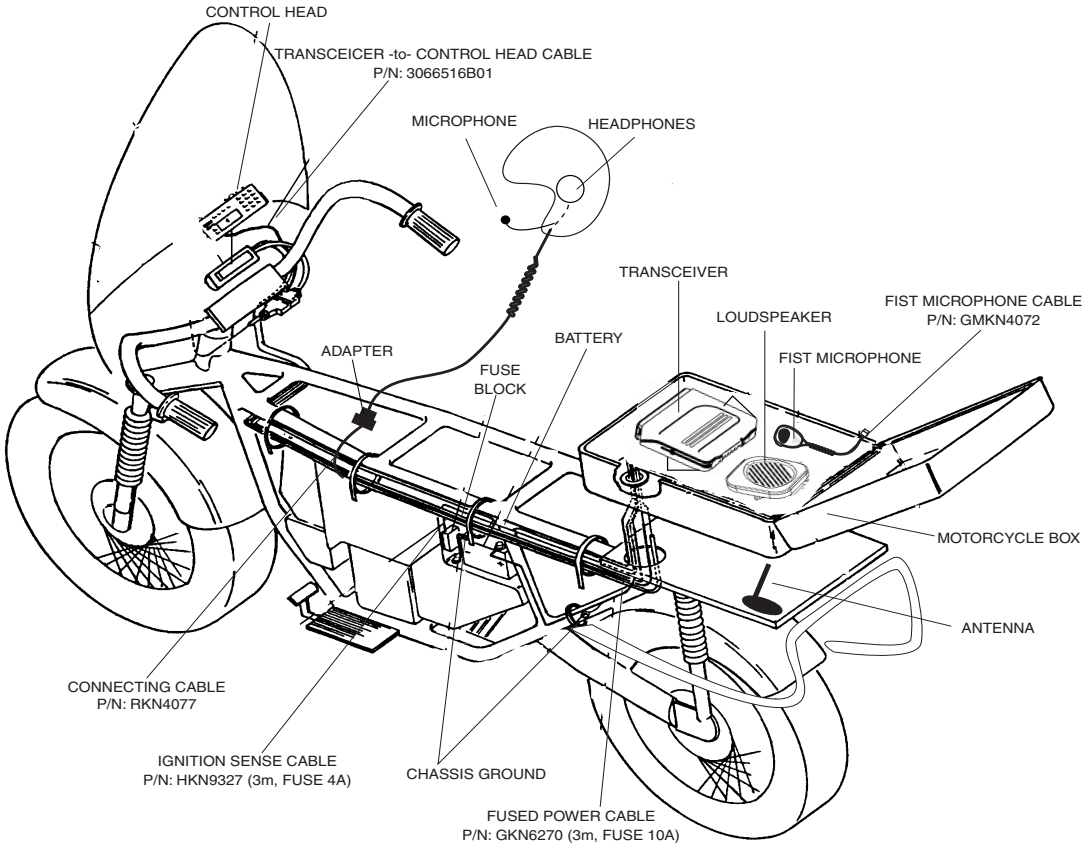


Figure 17 Motorcycle Installation

Configuration with SB 9600 Interface

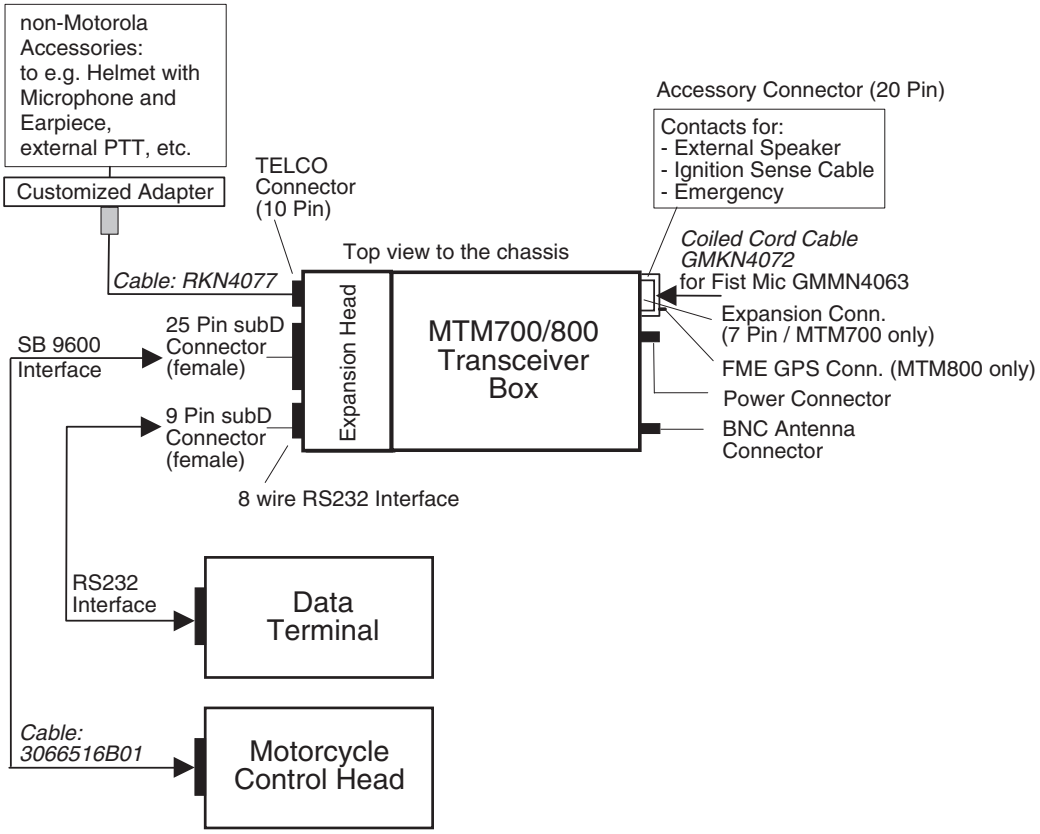


Figure 18 Motorcycle Installation with SB 9600 Interface

MOTORCYCLE SPECIFIC NOTE

The fist microphone (GMMN4063_) will be delivered with a coiled cord cable which does not fit into the rear side accessory plug of the transceiver and therefore must be replaced by the cable GMKN4072_.

To unscrew the coiled cord cable supplied with the fist microphone:

1. Rotate the locking collar at the base of the microphone in a counterclockwise direction until it stops.
2. Pull the coiled cord cable out and away from the base of the microphone.
3. Install the coiled cord cable (GMKN4072_) in the reverse order of removal.
4. Mount the new cable at the rear side as shown in a separate installation leaflet supplied with the cable GMKN4072_.

Configuration with Y-Adapter (Chinese version, MTM700 only)

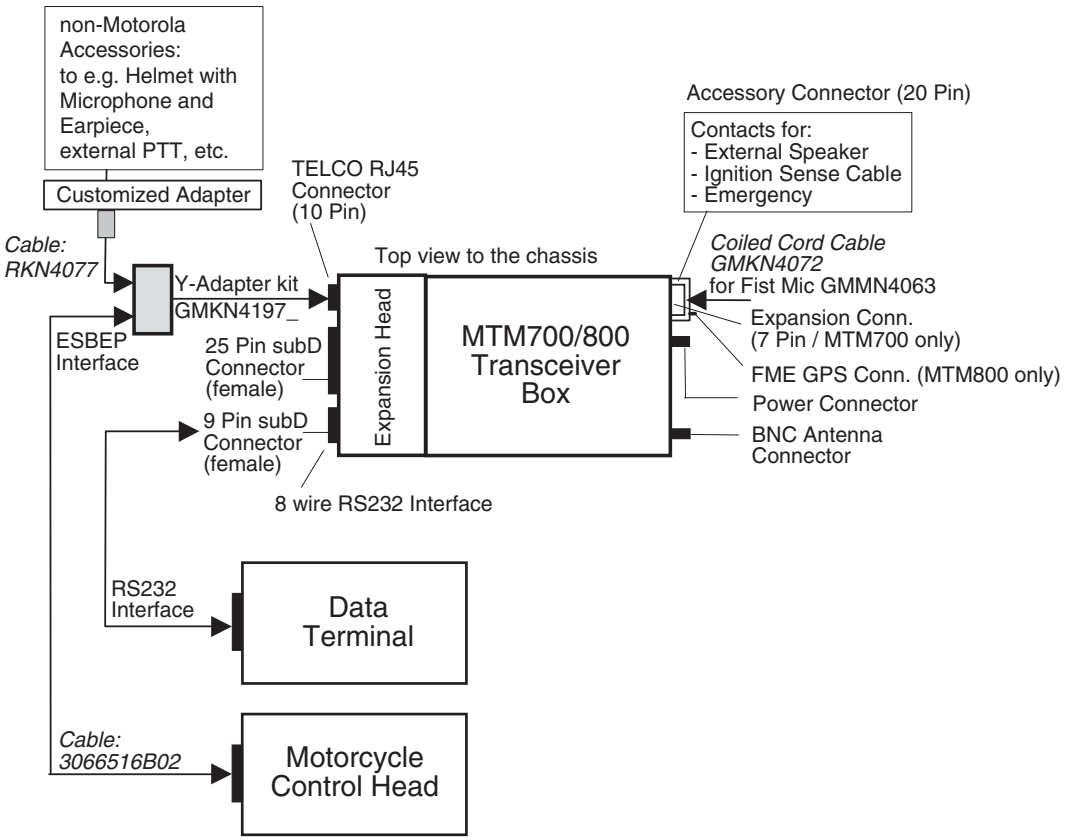


Figure 19 Motorcycle Configuration with Y-Adapter

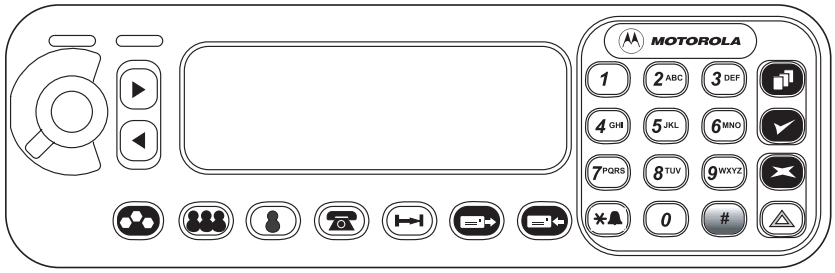
MOTORCYCLE SPECIFIC NOTE

The fist microphone (GMMN4063_) will be delivered with a coiled cord cable which does not fit into the rear side accessory plug of the transceiver and therefore must be replaced by the cable GMKN4072_.

To unscrew the coiled cord cable supplied with the fist microphone:

1. Rotate the locking collar at the base of the microphone in a counterclockwise direction until it stops.
2. Pull the coiled cord cable out and away from the base of the microphone.
3. Install the coiled cord cable (GMKN4072_) in the reverse order of removal.
4. Mount the new cable at the rear side as shown in a separate installation leaflet supplied with the cable GMKN4072_.

Motorcycle Control Head



Note: The keypad labeling of the control head may vary according to the specific customer/country concerns.

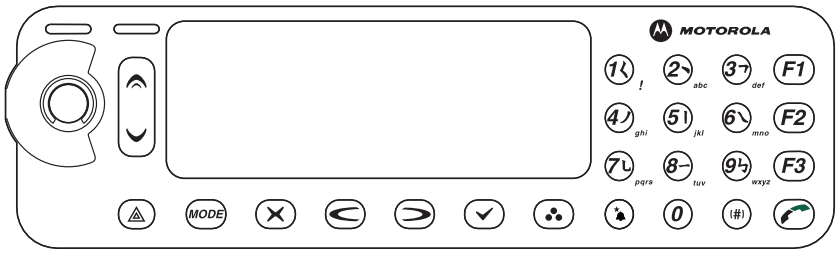


Figure 20 Motorcycle Control Head - front side (abowe: Standard EMEA CHD / below: Chinese CHD)

Motorcycle Control Head Installation

1. Install the bushings into the trunnion (see Figure 21 Motorcycle Control Head mounted in a trunnion).
2. Slide the control head into the mounting trunnion until it snaps into place.
3. Hand tighten the wing screws (over-tightening with a tool will cause damage to both the control head and the trunnion). After a few turns, tilt the control head for an optimum view of the display. Then complete tightening of the wing screws.
4. Ensure that the control head is grounded. This should be done via one of the screws that holds the connector at the back of the control head, (see Figure 21 Motorcycle Control Head mounted in a trunnion).

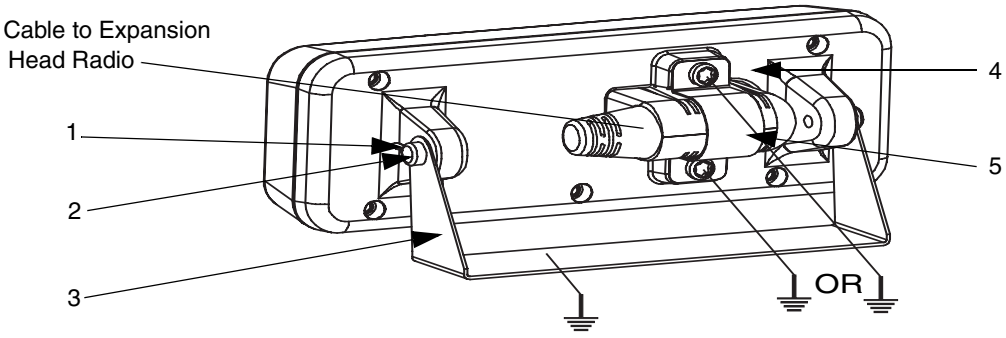


Figure 21 Motorcycle Control Head mounted in a trunnion

Mechanical Parts

Table 8 Motorcycle Control Head - Mechanical Parts List for Installation

Item	Motorola Part No.	Description
1	0305760W02	Wing Screw(2x)
2	4380128N01	Bushing (2x) between trunnion and control head
3	0780127N02	Trunnion (Metal)
4	3202113U01	Gasket inside the connector
5	SDLN4486	Connector Bracket Kit

Installation of Connecting Cable (3066516B01)

1. Plug the 25-pin D-type connector to the 25-pin socket of the Expansion Head Radio and secure it with the screws.
2. Before connecting the 18-pin female connector to the Motorcycle Control Head insert the black gasket. Position is shown in the figure below.

NOTE: Only the **black gasket** gives you full IP57 protection. The white gasket packed with the trunnion is not required for this installation.

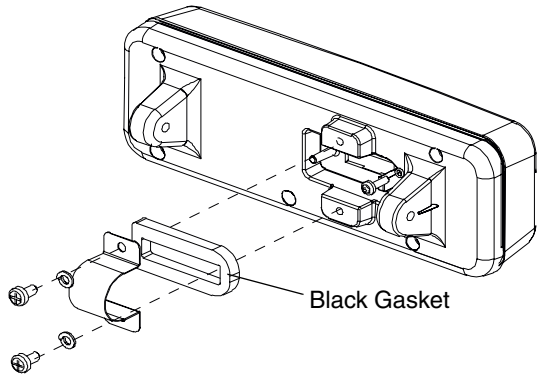


Figure 22 Black Gasket Position

Expansion Head Radio with Standard Control Head & Data Terminal

This configuration allows controlling the radio (Transceiver Box) by the Standard Control Head.

In addition sending / receiving of packet data or short packet data by using a Data Terminal which is connected to the 9 pin subD connector (8-wires RS232 interface) is possible. The connecting cable is a standardized RS232 cable and is available in PC shops.

The Standard Control Head can be connected to the Expansion Head via the cable RKN4077 (3m), RKN4078 (5m), RKN4079 (7m).

Both, the Standard Control Head as well as the Data Terminal can be used at the same time.

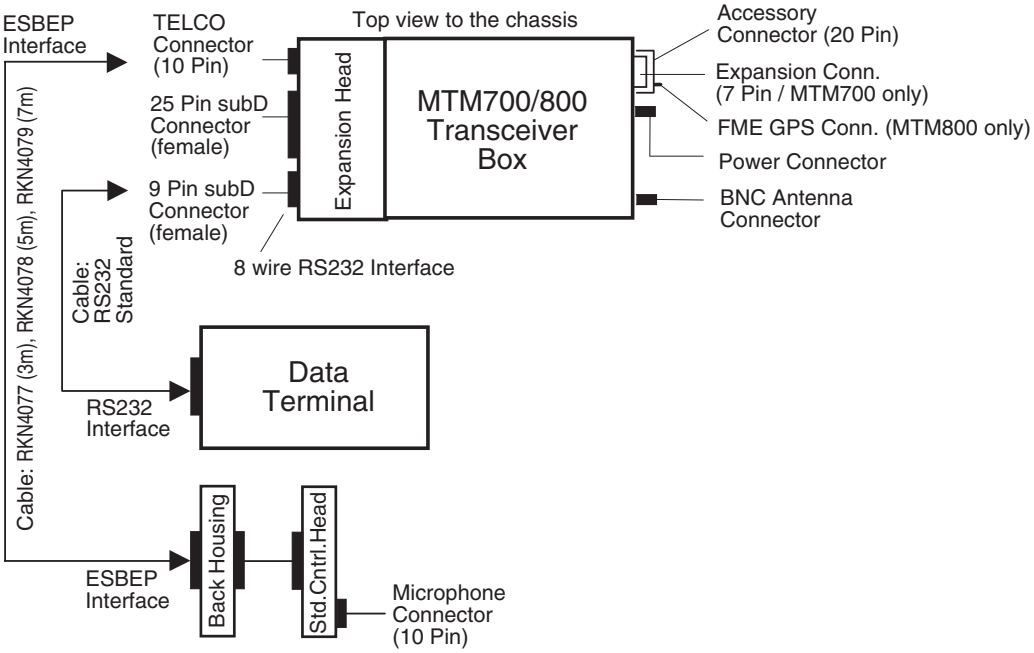


Figure 23 Configuration with Remote Standard Control Head and Data Terminal

Expansion Head Radio with Control Terminal & Data Terminal

This configuration allows controlling the radio (Transceiver Box) with a Control Terminal (e.g. Personal Computer, Laptop, Console etc.). In this configuration the Control Terminal is a substitute for the Standard Control Head. The Control Terminal will be connected to the 25 pin socket of the Expansion Head via the cable GMKN4079 (see section „Connecting Cable“ for more information).

A Data Terminal (e.g. Personal Computer, Laptop, Console etc.) can be connected in addition to the 9 pin subD connector by using the 8-wires RS232 interface to send/receive packet data or short pakket data. The connecting cable is a standardized RS232 cable and is available in PC shops.

Both, the Control Terminal as well as the Data Terminal can be used at the same time.

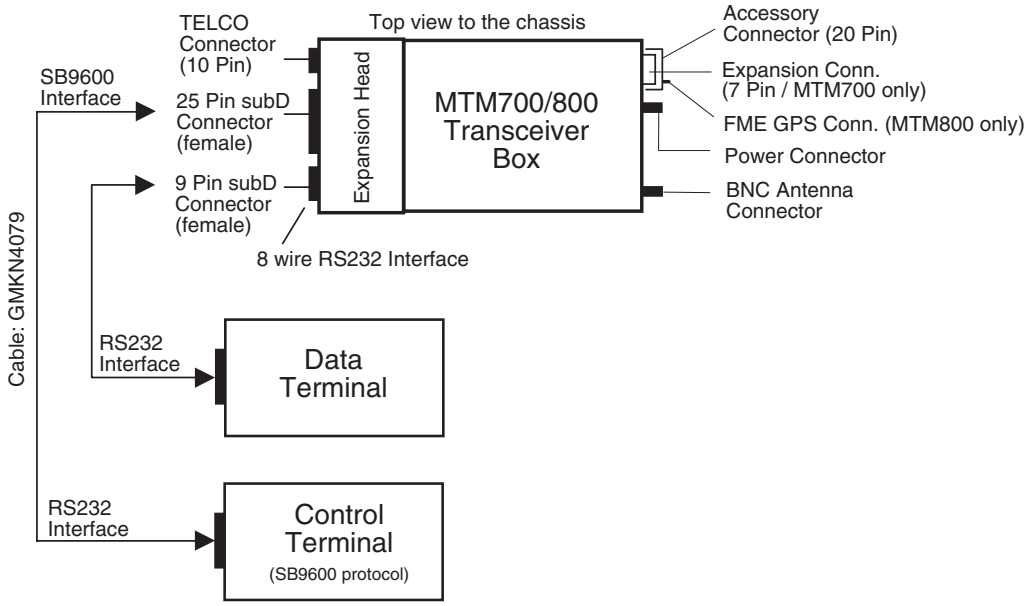


Figure 24 Configuration with Remote Control Terminal and Data Terminal

Connectors & Pin Assignment of the Radio

Transceiver Rear Side - Pin Function

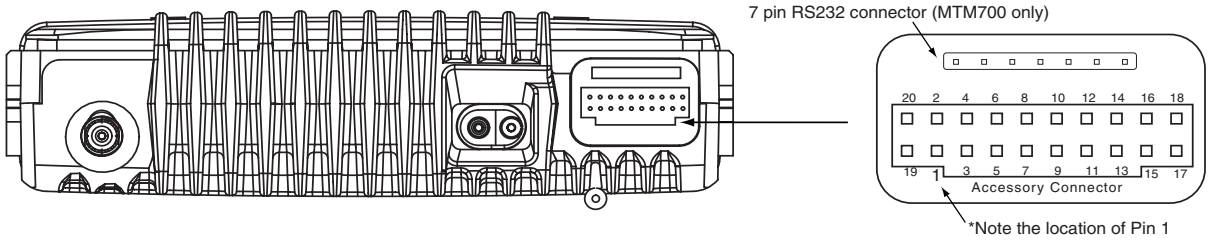


Figure 25 Location of Accessory Connector and Expansion Connector - Rear Side

This section gives a description of the Accessory Connector and Expansion Connector pin functions. The Expansion Connector provides a 4-wire RS232 interface for connecting Data Devices.

Caution **CAUTION: The accessory connections shown are not compatible to some other models of Motorola radios. Check the appropriate accessory or technical manual for further information.**

Table 9 20-Pin Accessory Connector

Pin	Function	Description
1	EXTERNAL SPEAKER -	Speaker - and Speaker + (Pin 16) are used to connect an external speaker. The audio PA is a bridge amplifier with a minimum load resistance of 3.2 ohms.
2	EXTERNAL MIC AUDIO	External-, Emergency-, or Hot-Microphone; depends on CPS programming. This microphone signal is independent of the microphone signal on the microphone connector. The DC impedance is 660 ohms and the AC impedance is 560 ohms.
3	EXTERNAL PTT	This is a digital input to trigger external PTT; active low; non active high
4	EXTERNAL ALARM	This is a digital output for External Alarm / Fault Indication; active low; open collector with 4k7 Ohms pull up to B+
5	TX_AUDIO	This input is intended for injecting signals into the transmit path. Input impedance > 10 k Ohms; input level = 775mV_{RMS}
6	KEYFAIL / FLASH	This line supports the encryption module and the flash mode. Service Aids: 12 volts at this pin during power up/on brings the radio into the flash mode.
7	ANALOG GROUND	Analogue Ground
8	DIGITAL_GROUND	Digital Ground
9	EMERGENCY	To activate this functionality the pin has to be connected to ground. This will turn on the radio.

Table 9 20-Pin Accessory Connector

Pin	Function	Description
10	IGNITION	Connecting this pin to the ignition line of the vehicle that will automatically turn on the radio if ignition of the vehicle is turned on. High active.
11	RX_AUDIO	This is the received RX signal. Output impedance approximate 600 Ohms; unsymmetrical; output level = 775mV$_{RMS}$
12	AUDIO_PA_ENABLE	This is a digital input. High level or pin open enables the audio PA; Low level disables the audio PA.
13	SWB +	This voltage is available when the radio is switched on. The max. current is 1.0A w/o GPS board and 0.8A with GPS board mounted.
14	HOOK	This is a high active digital input. Low = on hook; High = off hook
15	SCI_DTR	Data Terminal Ready, used for clock input for high speed flashing. *Reserved for Service Aids.*
16	SPEAKER +	Positive output of radio's audio PA (see Pin 1).
17 *	SCI_CTS	Radio OUTPUT: Clear To Send *(reserved for service aids)*
18 *	SCI_RTS	Radio INPUT: Request To Send *(reserved for service aids)*
19 *	SCI_RXD	Radio OUTPUT: Receive Data *(reserved for service aids)*
20 *	SCI_TXD	Radio INPUT: Transmit Data *(reserved for service aids)*

NOTE *	**The 4-wire 3 Volts SCI interface on the accessory connector (pins 17 -20) can only be used for flashing of radio firmware and programming software features. It can NOT be used for communication during normal radio operation.**

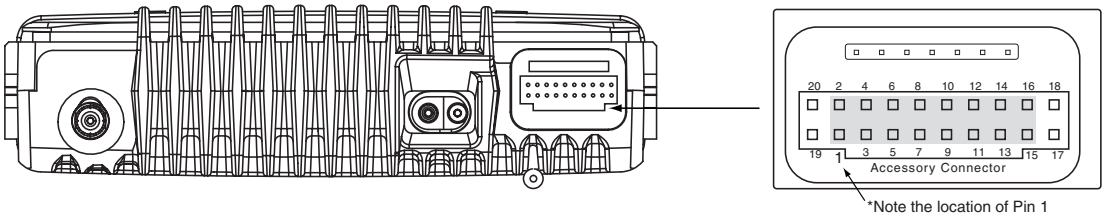
Table 10 7-Pin RS232 connector (only available on MTM700)

Pin	Function	Description
1	GND	Ground
2	NC	Guide Pin
3	CTS	Clear to Send
4	RTS	Request to send
5	SCI-TX	Transmit Data
6	SCI-RX	Receive Data
7	GND	Ground

Accessory Connection Plan

Caution

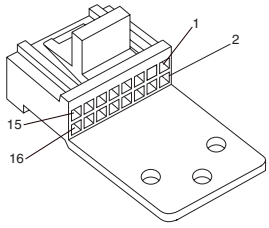
CAUTION: The accessory connections shown are not compatible to some other models of Motorola radios. Check the appropriate accessory or technical manual for further information. Ensure correct position of the accessory connector.

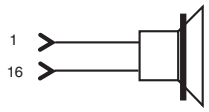


16-pin Accessory Connector

The 16-pin connector, Part Number: 1580922V01 (delivered with the accessory connector kit, Part Number: GMBN1021) plugs into the center of the 20-pin accessory connector. The four outside pins are not connected, see grey square at figure above.

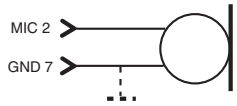
(Alternatively a 20-pin connector can be used as well, Part Number: 1586184B01).



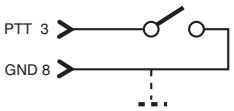


GMSN4066 Speaker 13W
GMSN4078 Speaker 5W

GMBN1021 Accessory connector kit containing:
Seal, Part No 3202606Y02
Accessory Connector Housing 16-Pin, Part No 1580922V01
Crimp Contact, Part No 2984249N01

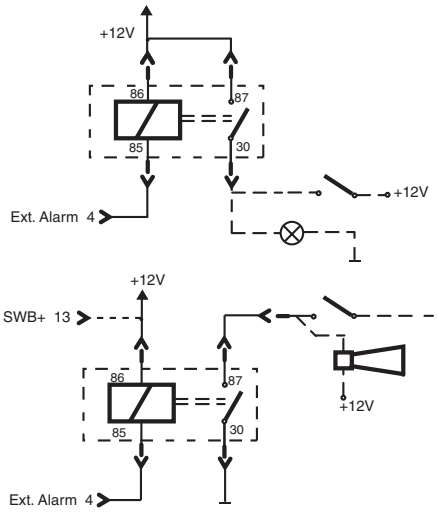


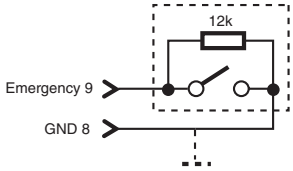
GMMN4065 Visor Microphone
GMMN1033 Visor Mic, omni directional



RLN4856 Footswitch
RLN4857 Pushbutton w/Remote PTT
RLN4858 Gooseneck PTT

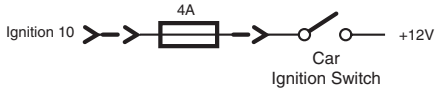
GKN6272 External Alarm, Relay and Cable



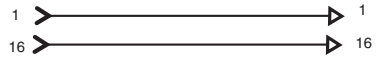


RLN4836 Tri-state Emergency Footswitch and Cable

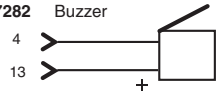
HKN9327 Ignition Sense Cable



GMKN4084 Speaker Extension Cable



GLN7282 Buzzer



Caution

CAUTION: DO NOT short pin 16 or pin 1 on the accessory connector to ground; this may damage the radio.

Connectors & Pin Assignment of Expansion Head and Remote Mount Head

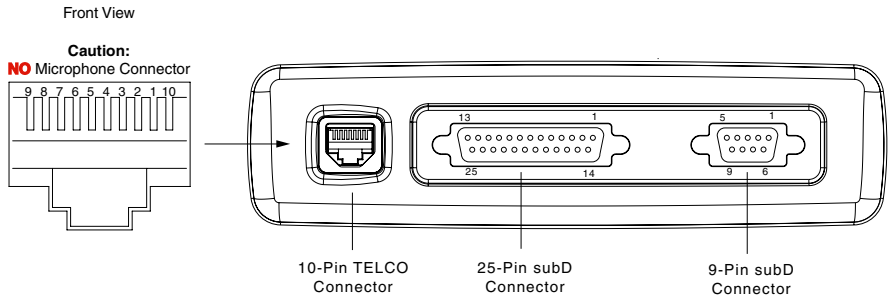


Figure 26 Expansion Head - Front View and Connector Location

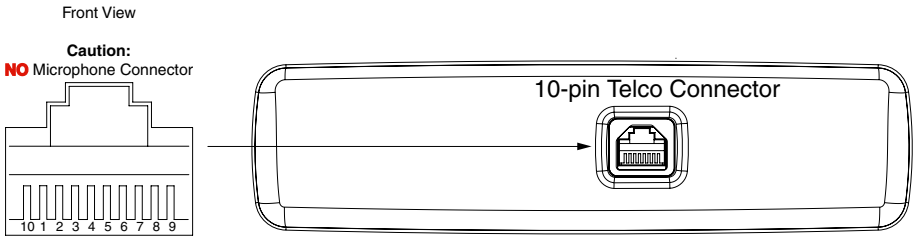


Figure 27 Remote Mount Head - Front view and Connector location

10-Pin TELCO Connector

Expansion Head Radio:

a) The 10 pin Telco connector can be used to connect a customized adapter for e.g. connecting the helmet including microphone/earpiece (non-Motorola accessory) or an external PTT. The customized adapter will be connected via the cable RKN4077.

b) The 10 pin Telco connector can be used to connect a remote mount Standard Control Head.

DO NOT connect any other accessories (e.g. microphone). This might result in malfunctioning hardware failure.

Remote Mount Head:

The 10 pin Telco connector of the Remote Mount Head can be used in the same way as described on b).

Table 11 10-Pin TELCO Connector

Pin	Function	Description
1	FLT_A+	This voltage is at battery voltage level and is available as long as the radio is connected to the supply voltage. The maximum current is 300 mA. A fuse in the radio prevents further circuit damage in case of shorting this pin to ground.
2	5V Supply Voltage	This voltage (5 volts) is available when the radio is switched on. The maximum output current is 100mA.
3	Radio On / Off Control	This is the Standard Control Head service request input. A level of 5 volts indicates that the Standard Control Head needs to communicate with the radio. In addition it switches on the radio's voltage regulators. The idle state is a level below 0.6V.
4	Ground	Ground
5	Speaker -	Negative output of the radio's audio PA. Speaker + and Speaker - are used to connect a control head speaker or monitor speaker.
6	Internal Mic Audio	This input connects to the microphone connector on the Standard Control Head and depends on radio programming. This microphone signal is independent of the microphone signal on the accessory connector. The nominal input level is 80 mV. The DC impedance is 660 ohms and the AC impedance is 560 ohms.
7	Bus +	This is used for communication between the radio and a Standard Control Head.
8	Speaker +	Positive output of the radio's audio PA. (See Pin 5)
9	Handset Audio	This is a low power audio output primarily intended for a connected Handset. The DC level is 4.6V and the AC level depends on the volume setting.
10	Expansion PTT	When this input is used to key up the transmitter, the Internal Mic Audio input (pin 6) is selected.

25-Pin subD Connector

Connection of Data Devices:

This connector offers a connectivity between a Data Device with RS232 interface and the Expansion Head Radio with its SB9600 interface. This interface is a special Motorola Serial Interface. For further information of the SB9600 Interface Cable please refer to section „Connecting Cables“.

Connection of the Motorcycle Control Head:

If this connection to a Data Device is not required it is also possible to connect the Motorcycle Control Head (Motorola P/N: SDLN4506)

NOTE: The radio must be turned ON/OFF via the Ignition Sense Cable HKN9327 which has to be connected on Pin 10 of the Accessory Connector on the rear side of the radio.

Table 12 25-Pin subD Connector

Pin	Function	Description
1	GND	Ground
2	RS232_SCI_TX	Transmit Data (4-wire RS232 with RS232 level)
3	RS232_SCI_RX	Receive Data (4-wire RS232 with RS232 level)
4	RS232_RTS	Request to Send (4-wire RS232 with RS232 level)
5	RS232_CTS	Clear to Send (4-wire RS232 with RS232 level)
6	FLT_A+	This voltage is at battery voltage level and is available as long as the radio is connected to the supply voltage. A fuse in the radio prevents further circuit damage in case of shorting this pin to ground. This pin is only used together with the pins 14, 20, and 23 to select flashing and programming mode, SB9600 mode or to switch the radio on.
7	Ground	Ground for RS232
8	SB9600_BUSY	SB9600 Busy
9	NC	Not Connected
10	NC	Not Connected
11	NC	Not Connected
12	SW_B+	Switched U_B + / 100 mA
13	SB9600_BUS-	SB9600 BUS-
14	FLASH_MODE	This input is intended to switch the radio into flashing & programming mode. When the radio is switched off and this pin is connected with pin 6 (FLT A+), the radio switches on and enters flashing & programming mode.
15	SB9600_BUS+	SB9600 BUS+.
16	Internal Mic Audio	This input depends on radio programming mode. This microphone signal is independent of the microphone signal on the accessory connector. The nominal input level is 80 mV. The DC impedance is 660 ohms and the AC impedance is 560 ohms.
17	SB9600-Reset	This output can be used to reset a SB9600 device.
18	NC	Not Connected
19	GROUND	Ground
20	Radio ON/OFF	The radio can be switched on by connecting this pin with pin 6 (FLT A+). As long as both pins are connected, the radio will be switched on.

Table 12 25-Pin subD Connector

Pin	Function	Description
21	Motorcycle ON/OFF	On / Off control for Motorcycle Control Head
22	EXPANSION-PTT	When this input is used to key up the transmitter, the internal Mic Audio input (pin 16) is selected.
23	SB9600_SW	This input is intended to switch the 4 wire RS232 interface into SB9600 mode. The radio must be switched off and then this input must be connected to pin 6 (FLT A+). When the radio is switched on again, the 4 wire RS232 interface will be disabled and the SB9600 mode will be active.
24	HANDSET_AUDIO	This is a low power audio output primarily intended for a connected handset. the Dc level is 4.6 V and the AC level depends on the volume setting.
25	NC	Not Connected

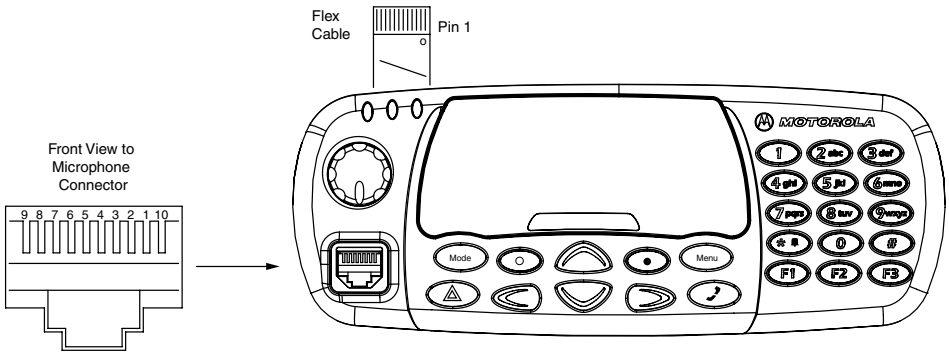
9-Pin subD Connector

The pin assignment of this 9 pin SubD connector will follow the requirements of an RS232 standard interface with RS232 voltage level. The cable (see section „Connecting Cables“) which has to be used is a standardized serial interface cable which allows to connect a data device with an RS232 Interface such as e.g. PC, Laptop, console etc.

Table 13 9-Pin subD Connector

Pin	Function	Description	PC direction
1	DCD	Data Carrier Detect	Input
2	RXD	Received Data	Serial IN
3	TXD	Transmitted Data	Serial OUT
4	DTR	Data Terminal Ready	Output
5	Ground	Ground	
6	DSR	Data Set Ready	Input
7	RTS	Request to Send	Output
8	CTS	Clear to Send	Input
9	RI	Ring Indicator	Input

Connector & Pin Assignment of the Standard Control Head



Note: The keypad labeling of the control head may vary according to the specific customer/country concerns.

Figure 28 View of the Standard Control Head's Microphone Connector and Flex Cable

Table 14 10-pin Microphone Connector

Pin	Function	Description
1	FLT A+	Filtered A+
2	5V	+ 5V regulated
3	Hook	Microphone off-hook signal
4	Ground	Ground
5	Mic. High	Microphone analogue audio input
6	PTT / IR decoder	PTT or IR-Decoder PTT
7	BUS +	SBEP bus
8	Handset audio	Handset audio
9	Analogue input 3	Keypad Mic. Control
10	Analogue input 2	Keypad Mic. Control

Connecting Cables

Motorcycle Control Head-to-Expansion Head (SB 9600 Interface)

Part Number: 3066516B01
Length: 2.5 m (8.2 feet)

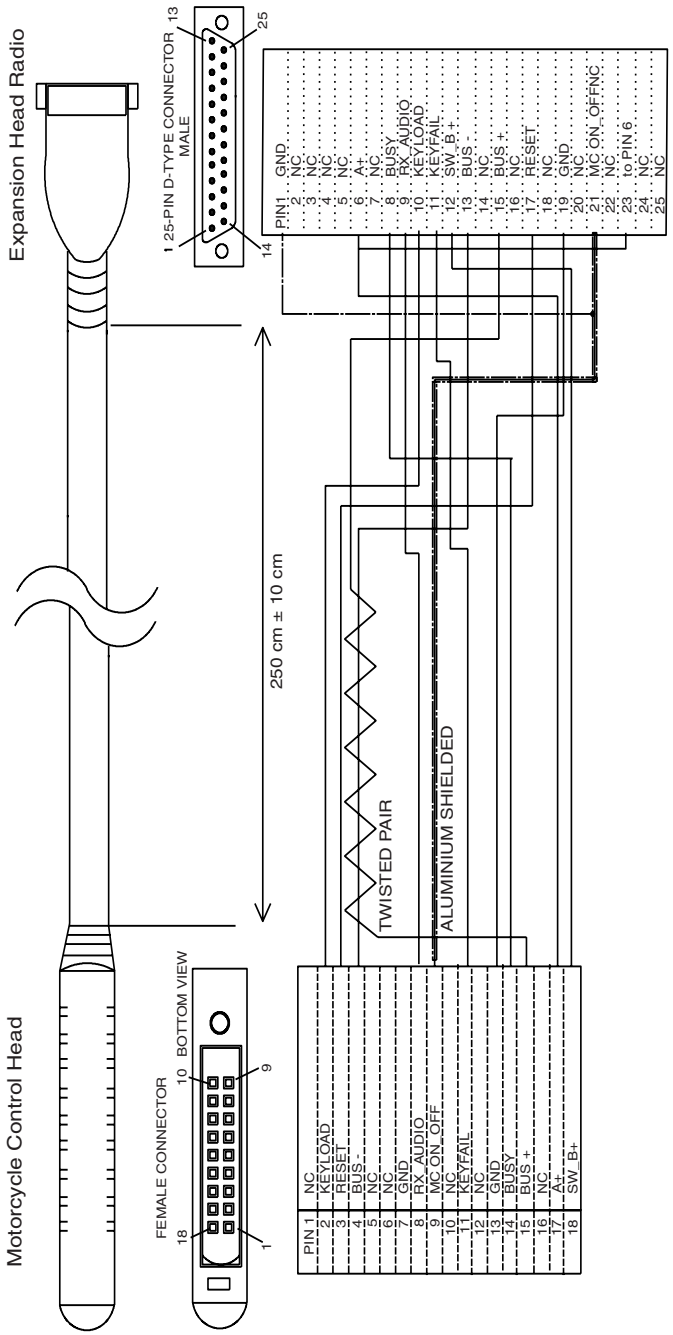


Figure 29 Connecting Cable - Expansion Head Radio -to- Motorcycle Control Head

Motorcycle Control Head-to-Expansion Head via Y-Adapter (Chinese version)

Part Number: 3066516B02
Length: 2.5 m (8.2 feet)

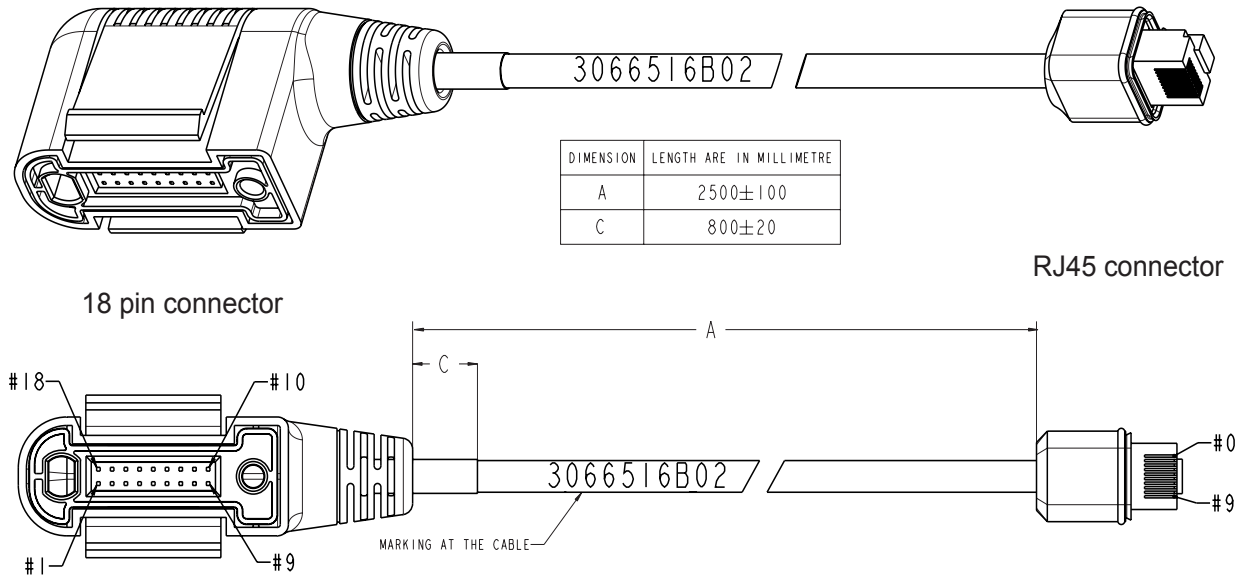


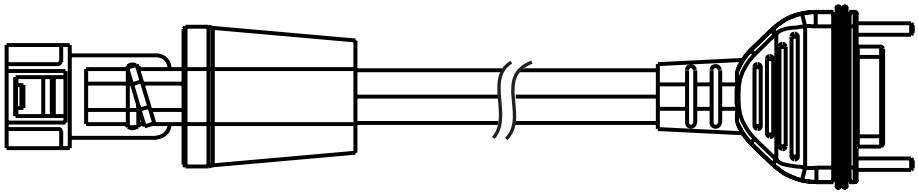
Figure 30 Motorcycle CHD to Y-Adapter Cable

Table 15 Motorcycle CHD to Y-Adapter Cable, Connector Pin Functions

RJ45 Pin	Signal	18 pin Connector
1	FLT_A+	17
2	5V	5
3	ON_OFF_CONTROL	9
4	GROUND	7
7	BUS+	15

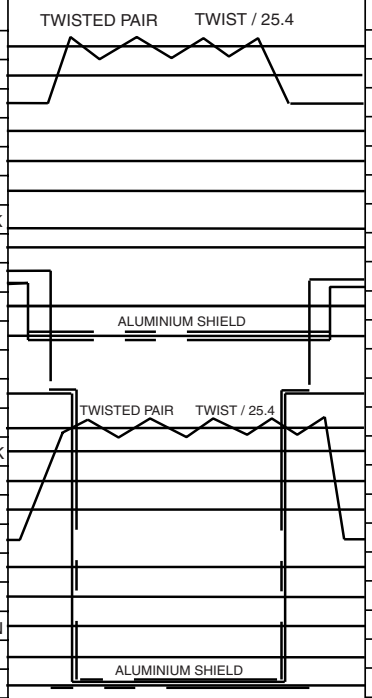
Radio-to-Junction Box

Part Number: 3066537B01
Length: 6 m (19.69 feet)



MTM700 ACCESSORY CONNECTOR 20-pin AMP

Pin	from (signal name)	wire gage	wire colour
16	SPKR +	20	BLUE
11	RX_AUDIO	26	RED
1	SPKR -	20	BROWN
8	DIGITAL_GROUND	20	BLACK
5	TX_AUDIO	26	GREY
13	SWITCH_BATT +	20	RED
14	HOOK	26	YELLOW/BLCK
12	AUDIO_PA_ENABL	26	TAN
7	ANA_GROUND		SHIELDS
	N.C	20	WHITE
2	EXT_MIC_AUDIO	26	WHITE/BLACK
19	SCI_RXD	26	VIOLET
17	SCI_CTS	26	RED
10	IGNITION	26	GREEN-BLACK
15	SCI_DTR	26	BLUE
	N.C.	26	PINK
18	SCI_RTS	26	ORANGE
6	KEYFAIL	26	WHITE-BLUE
4	EXTERNAL_ALARM	26	WHITE-RED
9	EMERGENCY	26	WHITE-GREEN
3	EXTERNAL_PTT	26	YELLOW
20	SCI_TXD	26	GREEN



JUNCTION BOX CONNECTOR 26-pin DSub

Pin	to (signal name)
1	SPKR +
2	RX_AUDIO
3	SPKR -
4	D_GND
5	TX_AUDIO
6	SWITCH_BATT +
7	HOOK
8	AUDIO_PA_ENABL.
9	AUDIO_GND
10	D_GND
11	EXT_MIC
12	N.C
13	RX (UART TX)
14	CTS
15	IGNITION
16	DTR
17	RESET
18	RTS
19	KEYFAIL/FLASH
20	EXT_ALARM
21	EMERGENCY
22	EXT_PTT
23	TX (UART RX)
24	N.C.
25	N.C.
26	N.C.

Figure 31 Connecting Cable Terminal -to- Junction Box

Expansion Head Radio-to-Data Device

This is a standardized RS232 cable (will not be provided by Motorola). Use the 9-pin socket on the front side of the Expansion Head Radio to connect this cable with the data device.

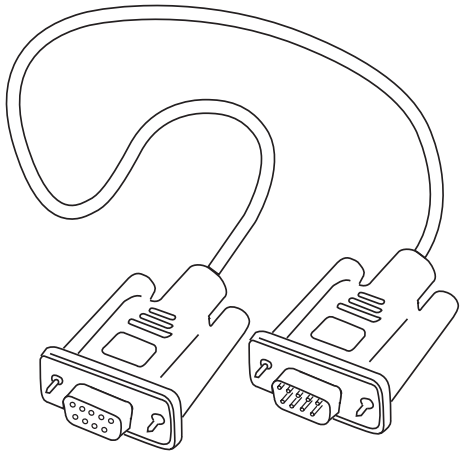


Figure 32 Standardized RS232 Cable

NOTE **The Expansion Head has a protection grade of IP54. To maintain IP54 sealing when connecting an RS232 data cable make sure to use an IP54 specified cable (example: ROLINE AT-Modemcable ST-BU 1,8m order no. 11.01.4518).**

Expansion Head Radio-to-Fist Microphone

The GMKN4072 Connecting Cable replaces the existing coiled cord cable of the fist microphone (Motorola P/N: GMMN4063).

Operation

The crimped wires of the cable have to be connected into the 16-pin Accessory Connector (delivered with speaker GMSN4066) and than plugged into the 20-pin connector on the rear side of the radio. The other end has a connector which fits into the fist microphone's housing.

Making Connections

First connect the exposed four wires to the 16-pin Accessory Connector as shown in Figure 1 and than plug the connector block into the 20-pin accessory socket on the rear side of the radio. The connector block plugs into the center of the 20-pin accessory connector (four outside pins do not connect).

To remove the existing coiled cord cable:

1. Rotate the locking collar at the base of the microphone in a counterclockwise direction until it stops.
2. Pull the cord out and away from the base of the of the microphone.

Install the new coiled cord GMKN4072 in a reverse order of removal.

Part Number: GMKN4072
Length: 65 cm (2.2 feet)

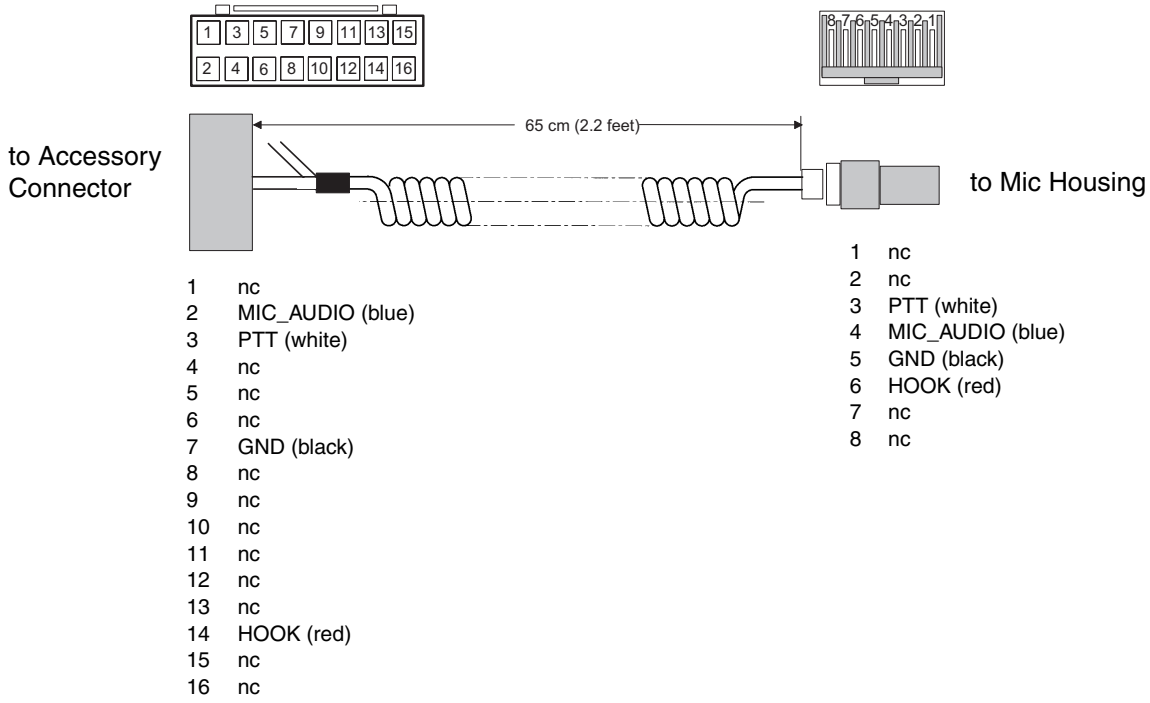


Figure 33 Pin Assignment of Cable from Accessory Connector to Microphone Housing

Expansion Head Radio-to-Adapter for Helmet, External PTT, etc.

Please note that the adapter is a non-Motorola accessory and has to be special configured for the customer.

Part Number: RKN4077
Length: 3m (10 feet)

Table 16 Colour Assignment of the Cable from Expansion Head -to- Helmet, external PTT, etc.

Pin	Colour	Function	Description
1	BLUE	FLT_A+	This voltage is at battery voltage level and is available as long as the radio is connected to the supply voltage. The maximum current is 300 mA. A fuse in the radio prevents further circuit damage in case of shorting this pin to ground.
2	WHITE	5V Supply Voltage	This voltage (5 volts) is available when the radio is switched on. The maximum output current is 100mA.
3	ORANGE	Radio On / Off Control	This is the control head service request input. A level of 5 volts indicates that the control head needs to communicate with the radio. In addition it switches on the radio's voltage regulators. The idle state is a level below 0.6V.

Table 16 Colour Assignment of the Cable from Expansion Head -to- Helmet, external PTT, etc.

Pin	Colour	Function	Description
4	BROWN	Ground	Ground
5	GREY	Speaker -	Negative output of the radio's audio PA. Speaker + and Speaker - are used to connect a control head speaker or monitor speaker. 1)
6	BLACK	Internal Mic Audio	This input connects to the microphone connector on the control head and depends on radio programming. This microphone signal is independent of the microphone signal on the accessory connector. The nominal input level is 80 mV. The DC impedance is 660 ohms and the AC impedance is 560 ohms.
7	YELLOW	Bus +	This is used for communication between the radio and a standard control head.
8	GREEN	Speaker +	Positive output of the radio's audio PA. (See Speaker -) 1)
9	RED	Handset Audio	This is a low power audio output primarily intended for a connected Handset. The DC level is 4.6V and the AC level depends on the volume setting. 2)
10	PINK	Expansion PTT	When this input is used to key up the transmitter, the Internal Mic Audio input (see Internal Mic Audio) is selected.

1) The impedance of a connected speaker should be > 20 ohms
2) The impedance of a connected earpiece should be > 2200 ohms

Radio-to-Data Device: RS232 Interface Cable (MTM700 only)

The GMKN1016_ RS232 Interface Cable allows to connect Data Devices to the radio. This means this cable has to be used for when data transmission between the Radio and a Data Device is required. This cable is mostly used when the transceiver is equipped with a Remote Mount Head or the Standard Control Head is mounted directly. (Expansion Head Radio has a frontside connector). The cable has to be connected into the 7-pin Expansion Connector on the rear side of the radio (located above the 20-pin accessory connector) and into the 9-pin connector of a Data Device (e.g. PC, Laptop, console etc.).

The GMKN1016_ RS232 Interface Cable is not repairable. Order a replacement cable as necessary.

Length: 1.5 m (5 feet)

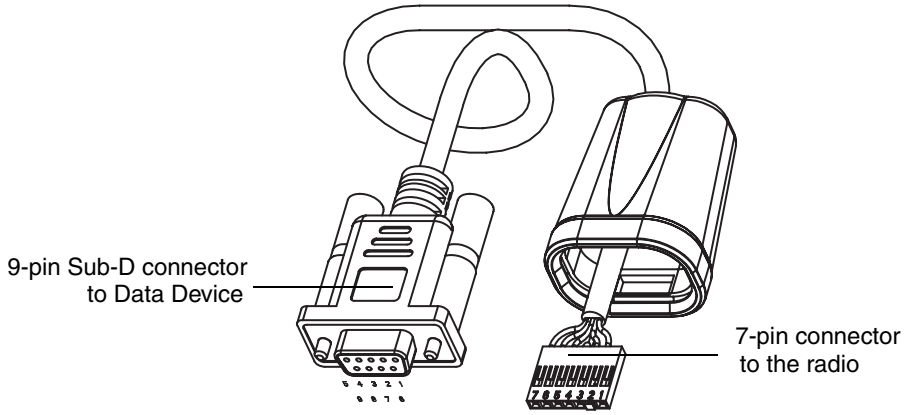


Figure 34 RS232 Interface Cable GMKN1016

Cable Connectivity

Table 17 Pin Assignment - RS232 Interface Cable GMKN1016

9-Pin Connector	Function	Colour	7-Pin Connector
1	N/C		
2	Receive Data	red	5
3	Data Transmit Ready	white	6
4	N/C		
5	Ground	black	7
6	N/C		
7	Request to Send	yellow	3
8	Clear to Send	blue	4
9	N/C	green	2 (guide pin only)

NOTE: This cable has been replaced by GMKN1022_ (see next page).

Radio-to-Data Device: Active Data Cable

The GMKN1022_ Active Data Cable provides a 5-wire RS232 interface (e.g. RxD, TxD, CTS, RTS, DTR) between a computer and a mobile radio. The cable has to be connected to the 20-pin Accessory Connector on the rear side of the radio and into the 9-pin connector of a Data Device (e.g. PC, Laptop, console etc.)
The GMKN1022_ Active Data Cable is not repairable. Order a replacement cable as necessary.

Length: 2.0 m (6.56 feet)

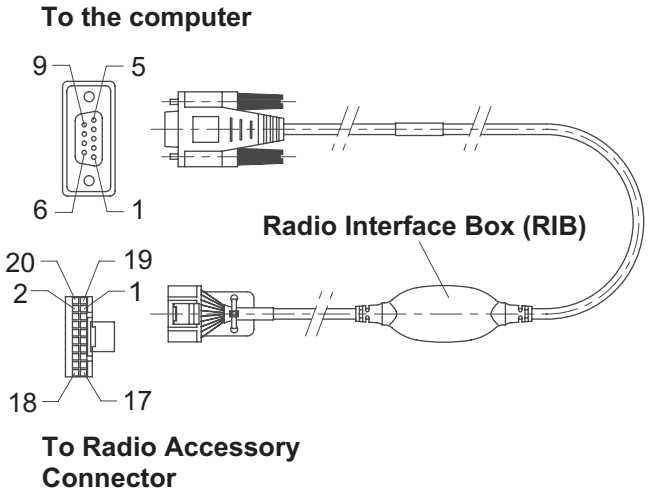


Figure 35 Active Data Cable GMKN1022

Cable Connectivity

Table 18 Pin Assignment - Active Data Cable GMKN1022

9-Pin Connector	Function	20-Pin Connector	Function
1	DCD	3	External PTT
2	RXD	8	GND
3	TXD	13	SWB +
4	DTR	15	DTR
5	GND	17	CTS
6	DSR	18	RTS
7	RTS	19	TXD
8	CTS	20	RXD
9	RI		

Interface Cable SB9600-to-RS232

The GMKN4079 SB9600 Interface Cable provides a connectivity between a computer's RS232 port and the Expansion Head Radio's SB9600 interface.

If the SB9600 Interface Cable is connected to the Expansion Head Radio then the Radio is switched into the SB9600 mode (Motorola Serial Interface) by a Data Device. this unit e.g. PC, laptop, console etc. controls the radio instead of a Motorcycle Control Head.

NOTE: The radio must to be turned ON/OFF via the Ignition Sense Cable HKN9327 which has to be connected on Pin 10 of the Accessory Connector on the rear side of the radio.

The GMKN4079 SB9600 Interface Cable is not repairable. Order a replacement cable as necessary.

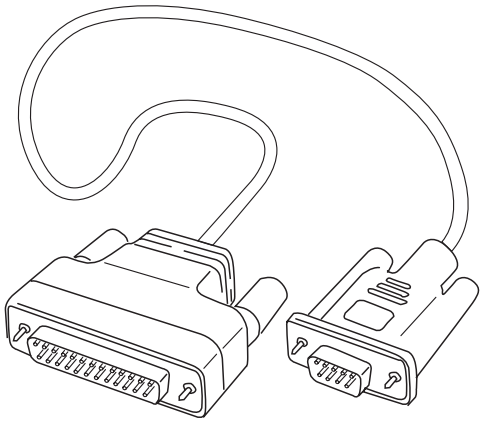


Figure 36 SB9600 Interface Cable - GMKN4079

Cable Connectivity

25-Pin Connector	Function	9-Pin Connector
2	Transmit Data	3
3	Receive Data	2
4	Data Transmit Ready	4
5	Clear to Send	8
7	Ground	5
6 *)	FLT A+	
23 *)	SB9600_S	

*) Pins 6 and 23 of the 25-pin connector are bridged.

Vehicle Antenna Installation

Mobile Radio Operation and EME Exposure

To assure optimal radio performance and that human exposure to radio frequency electromagnetic energy is within the guidelines referenced in this document, transmit *only* when people inside and outside the vehicle are at least the minimum distance away from a properly installed, externally-mounted antenna.The table below lists the minimum distance for several different ranges of rated radio power.

Table 19 Rated Power and Distance

Rated Power of Vehicle-Installed Mobile Two-Way Radio	Minimum Lateral Distance from Transmitting Antenna
Less than 7 Watts	20 Centimeters (8 inches)
7 to 15 Watts	30 Centimeters (1 Foot)
16 to 50 Watts	60 Centimeters (2 Feet)
More than 50 Watts	90 Centimeters (3 Feet)

Selecting an Antenna Site

1. Install the vehicle antenna external to the vehicle and in accordance with:

   a. The requirements of the antenna manufacturer/supplier
   b. The requirements of the vehicle manufacturer

2. The best mounting location for the antenna is in the center of a large, flat conductive surface. In almost all vehicles, mounting the antenna in the center of the roof will satisfy these requirements. A good alternate location is in the center of the trunk lid. If you use the trunk lid, ensure that the trunk lid is grounded by connecting grounding straps between the trunk lid and the vehicle chassis.
3. Ensure the antenna cable can be easily routed to the radio. Ensure that the antenna cable is routed separately and not in parallel to any other vehicle wiring or mobile radio cable wiring.
4. Check the antenna location for any electrical interference according to vehicle manufacturer requirements
5. Make sure the mobile radio antenna is installed at least 30 centimeters (1 foot) away from any other antenna on the vehicle..

NOTE **Any two metal pieces rubbing against each other (such as seat springs, shift levers, trunk and hood lids, exhaust pipes, etc.) in close proximity to the antenna can cause severe receiver interference.**

6. Motorola offers a glass-mount antenna as an accessory. This antenna should be placed as high as possible on the vehicle. Ensure that a rear-window defogger element does not touch the inductive “button” on the mounting foot of the antenna.
7. The MTM800 mobile terminal has the option of a GPS board. If a GPS or combined TETRA/GPS antenna is used, make sure that the antenna has a clear view to the sky and that the antenna base which carries the GPS receiver is not covered with any metallic or radio frequency absorbing material.

Antenna Installation Procedure

1. Mount the antenna according to the instructions provided with the antenna kit. Run the coaxial cable to the radio mounting location. If necessary, cut off the excess cable and install the cable connector.
2. Connect the antenna cable connector to the radio antenna connector on the rear of the radio.
3. In case of an installed GPS board, connect the GPS antenna to the GPS antenna connector on the rear side of the radio.

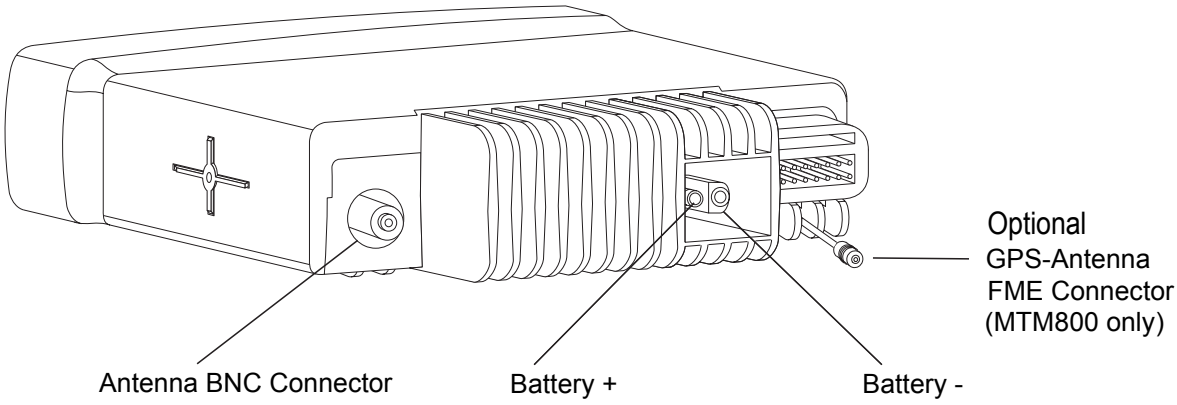


Figure 37 Connections to the Back of the Radio

Completing the Installation

1. Mount the microphone clip to a convenient spot near your radio.
2. Your microphone has a telephone-type connector at the end of its cord. Plug this connector into the 10-pin Telco connector of your Standard Control Head.
3. **DO NOT use the 10-pin telephone connector of**
   a) Expansion Head or
   b) Remote Mount Head
   to plug in a microphone.
4. To complete your radio installation, plug the power cable into the radio power connector.

External Speaker Installation

1. Remove the speaker from the trunnion bracket by loosening the two wing screws.
2. Choose a place to mount the speaker. When mounting the trunnion on the transmission hump, be careful that the transmission housing is not affected.
3. Use the trunnion bracket as a template to mark the positions of the mounting holes.
4. Centre-punch the spots you marked and drill a 4 mm (5/32-inch) diameter hole at each location.
5. Mount the trunnion bracket with the screws supplied (See Figure).
6. Insert the speaker into the trunnion bracket and tighten the two wing screws.
7. Insert the external speaker accessory plug into the accessory connector of the radio.

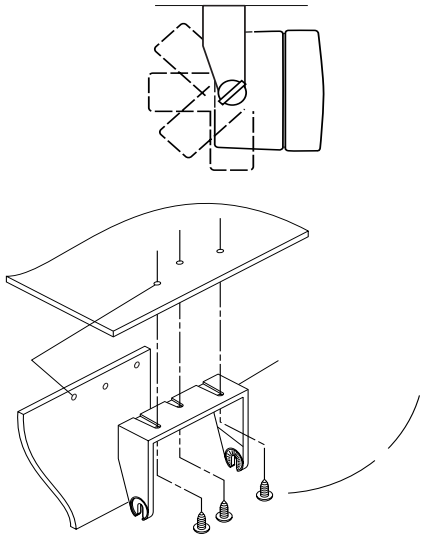


Figure 38 Mounting the Speaker under the Dashboard

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX

Product Specific Information for Digital Terminals Type MT912/MT712 and MT912M

This section gives the Service Personnel an overview about product specific notes. This is necessary to take special precautions to avoid the introduction of hazards when operating, installing, servicing or storing equipment. This terminal meets the applicable safety standards if it is used as described. All operating and safety instructions are to be followed carefully.

Equipment Electrical Ratings

Rated Voltage: 12 Volt DC

Rated Voltage Range: 10.8 to 15.6 V DC

Rated Curren:

MT912/MT912M (380-430MHz), MT512M (450-470MHz): 3 Amps @ 3 Watts RF power
MT712 (806-870MHz): 3.5 Amps @ 3 Watts RF power

Please be aware when planning the installation that there is a current consumption of approx. 3.5A during PTT and even 30mA when terminal is switched off.

Transmitter Frequency Range:
TMO: 380 to 430 MHz (MT912/MT912M), 806 to 825 MHz (MT712), 450 to 470 MHz (MT512M)
DMO: 380 to 430 MHz (MT912/MT912M), 851 to 870 MHz (MT712), 450 to 470 MHz (MT512M)

Receiver Frequency Range:
380 to 430 MHz (MT912/MT912M), 851 to 870 MHz (MT712), 450-470 MHz (MT512M)

Normal Load Conditions

Rated RF Power: 3 Watts

Rated Audio Power: 10 Watts @ 4 Ohms; 6 Watts @ 8 Ohms

Antenna Impedance: 50 Ohms

Operating Temp. Range: -30 to +60°C

Operating Time*: Continous / Intermittent

*Note: In general, the terminal transmit and receive time (operating cycle time) is determined by the communication system. On overload, respectively on extensive use beyond the systems specifications at high ambient temperatures, the terminal is protected by its thermal control, which cuts down the RF output power, thus reducing the terminal coverage range.

Fuse Identification

In case of blown fuses during the installation only replace those with identically value.
Nerver insert different values.

Fuse for Power Cable GKN6270/GKN6274: 10A (Motorola Part Number: 65C80283E05)
Fuse for Ignition Sense Cable HKN9327: 4A (Motorola Part Number: 65C80283E02)

Spezielle Produktinformationen für Funkgeräte des Typs MT912/MT712 und MT912M

Dieses Kapitel gibt dem geschulten Servicepersonal einen Überblick über wichtige produktspezifische Informationen. Diese Informationen sind wichtig, um Risiken beim Bedienen, Installieren und Service zu vermeiden. Dieses Funkgerät erfüllt die allgemeinen Sicherheitsstandards, sofern es so betrieben wird, wie in der Bedienungsanleitung beschrieben.

Nennwerte für das Funkgerät

Nennspannung: 12 Volt DC

Nennspannungsbereich: 10.8 bis 15.6 V DC

Nennstrom:

MT912/MT912M (380-430MHz), MT512M (450-470MHz): 3 A @ 3W HF Leistung
MT712 (806-870MHz): 3.5 A@ 3W HF Leistung

Bevor Sie die Installation planen, bedenken Sie, dass das Sprechfunkgerät beim Senden einen Stromverbrauch von ca. 3,5A hat und auch im ausgeschalteten Zustand einen Strom von ca. 30 mA verbraucht.

Sender-Nennfrequenzbereich:
TMO: 380 bis 430 MHz (MT912/MT912M); 806 bis 825 MHz (MT712), 450 bis 470 MHz (MT512M)
DMO: 380 bis 430 MHz (MT912/MT912M); 851 bis 870 MHz (MT712)

Empfänger-Nennfrequenzbereich:
380 bis 430 MHz (MT912/MT912M), 851 bis 870 MHz (MT712), 450 bis 470 MHz (MT512M)

Betriebsbedingungen

HF Nennleistung: 3 Watt

Lautsprecher Nennleistung:10 Watt an 4 Ohm; 6 Watt an 8 Ohm

Antennenimpedanz: 50 Ohm

Betriebstemperatur Bereich: -30 to +60°C

Betriebszeit*: fortwährend / periodisch

*Hinweis: Im allgemeinen wird die Sende- und Empfangsszeit (Betriebszeit) des Funkgerätes durch das Funksystem bestimmt. Bei Überlastung bzw. extensivem Betrieb über die Systemsspezifikationen hinaus bei hohen Umgebungstemperaturen wird das Funkgerät durch eine Temperaturkontrollschaltung geschützt, die die HF-Leitung reduziert. Daraus kann sich eine Verringerung der Leistungsmerkmale des Gerätes ergeben.

Sicherungen

Sollte während der Installation die Sicherung durchbrennen, darf sie **nur durch eine gleichwertige** Sicherung ersetzt werden.

Sicherung für DC Kabel GKN6270/GKN6274: 10A (Motorola Bestellnummer: 65C80283E05)
Sicherung für Ignition Sense Kabel HKN9327: 4A (Motorola Bestellnummer: 65C80283E02)